SEQUENCE LISTING

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<120> Transgenic plants carrying neoxanthin
     cleavege enzyme gene

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<150> JP   2000-010056
<151> 2000-01-13

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<170> PatentIn Ver. 2.0

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cct caa gcc caa att gat ttg ggt ttt agg ccc att aaa aga caa ccg    96
Pro Gln Ala Gln Ile Asp Leu Gly Phe Arg Pro Ile Lys Arg Gln Pro
                20                  25                  30


aag gtt att aaa tgc acg gtg cag atc gac gta acg gaa tta acc aaa   144
Lys Val Ile Lys Cys Thr Val Gln Ile Asp Val Thr Glu Leu Thr Lys
            35                  40                  45
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aaa cgc caa tta ttt aca ccc aga acc acc gct act ccg ccg cag cat    192
Lys Arg Gln Leu Phe Thr Pro Arg Thr Thr Ala Thr Pro Pro Gln His
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aat cct ctc cgg cta aac atc ttc cag aaa gcg gcg gcg att gcg atc    240
Asn Pro Leu Arg Leu Asn Ile Phe Gln Lys Ala Ala Ala Ile Ala Ile
 65                  70                  75                  80


gac gcg gct gag cgt gca tta atc tca cac gag caa gat tct cca ctt    288
Asp Ala Ala Glu Arg Ala Leu Ile Ser His Glu Gln Asp Ser Pro Leu
                 85                  90                  95


ccc aaa acc gct gat cca cgt gtt cag att gcc ggg aat tat tcc ccg    336
Pro Lys Thr Ala Asp Pro Arg Val Gln Ile Ala Gly Asn Tyr Ser Pro
                100                 105                 110


gta ccg gaa tct tcc gtc cgg cga aac ctc acc gtc gaa gga aca atc    384
Val Pro Glu Ser Ser Val Arg Arg Asn Leu Thr Val Glu Gly Thr Ile
                115                 120                 125


cct gac tgc att gac ggt gtt tat atc cgt aac ggc gcg aat ccg atg    432
Pro Asp Cys Ile Asp Gly Val Tyr Ile Arg Asn Gly Ala Asn Pro Met
    130                 135                 140


ttt gag cca aca gct ggg cac cat tta ttc gac gga gac gga atg gtt    480
Phe Glu Pro Thr Ala Gly His His Leu Phe Asp Gly Asp Gly Met Val
145                 150                 155                 160


cac gca gtt aaa ata acc aac ggt tca gct agc tac gca tgc cgg ttt    528
His Ala Val Lys Ile Thr Asn Gly Ser Ala Ser Tyr Ala Cys Arg Phe
                165                 170                 175


aca aaa acc gag aga ttg gtt cag gaa aaa cga ttg ggt cga cca gtt    576
Thr Lys Thr Glu Arg Leu Val Gln Glu Lys Arg Leu Gly Arg Pro Val
                180                 185                 190


ttc ccg aaa gca atc ggc gag ctt cac ggt cac tcg gga atc gca cgt    624
Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Ser Gly Ile Ala Arg
                195                 200                 205
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ttg atg ctg ttt tac gca cgt ggg ctt tgt ggt ctg atc aac aac caa     672
Leu Met Leu Phe Tyr Ala Arg Gly Leu Cys Gly Leu Ile Asn Asn Gln
    210             215             220

aac ggc gtc gga gta gca aac gcc ggt ttg gtt tac ttt aat aac cgg     720
Asn Gly Val Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn Asn Arg
225             230             235             240

ctt tta gct atg tca gaa gac gat tta ccg tac caa tta aaa att act     768
Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr Gln Leu Lys Ile Thr
            245             250             255

caa acc ggc gat ctc caa acc gtt gga cgt tac gat ttc gac ggt cag     816
Gln Thr Gly Asp Leu Gln Thr Val Gly Arg Tyr Asp Phe Asp Gly Gln
            260             265             270

tta aaa tcc gca atg ata gct cac ccg aaa ctg gac ccg gtt acg aag     864
Leu Lys Ser Ala Met Ile Ala His Pro Lys Leu Asp Pro Val Thr Lys
        275             280             285

gag ctt cac gcg tta agc tac gac gtc gtt aag aaa cct tac ctg aaa     912
Glu Leu His Ala Leu Ser Tyr Asp Val Val Lys Lys Pro Tyr Leu Lys
    290             295             300

tac ttc aga ttc tcg cca gac ggc gtt aaa tcg ccg gaa ttg gag atc     960
Tyr Phe Arg Phe Ser Pro Asp Gly Val Lys Ser Pro Glu Leu Glu Ile
305             310             315             320

ccg ctc gaa act ccg acg atg att cac gat ttc gct ata acg gag aat     1008
Pro Leu Glu Thr Pro Thr Met Ile His Asp Phe Ala Ile Thr Glu Asn
            325             330             335

ttt gtg gtg att cct gat caa caa gtc gtg ttc aag ctc ggc gag atg     1056
Phe Val Val Ile Pro Asp Gln Gln Val Val Phe Lys Leu Gly Glu Met
            340             345             350

att tcc ggt aaa tct ccg gtt gtt ttc gac gga gaa aag gtt tcc cga     1104
Ile Ser Gly Lys Ser Pro Val Val Phe Asp Gly Glu Lys Val Ser Arg
        355             360             365
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ttg ggg ata atg ccc aag gac gcg aca gaa gct tct cag ata atc tgg    1152
Leu Gly Ile Met Pro Lys Asp Ala Thr Glu Ala Ser Gln Ile Ile Trp
    370             375             380


gtg aac tct ccg gag acg ttc tgt ttt cat ctc tgg aat gca tgg gaa    1200
Val Asn Ser Pro Glu Thr Phe Cys Phe His Leu Trp Asn Ala Trp Glu
385             390             395             400


tcg ccg gag acg gag gag att gtg gtg atc gga tcg tgt atg tcg ccg    1248
Ser Pro Glu Thr Glu Glu Ile Val Val Ile Gly Ser Cys Met Ser Pro
            405             410             415


gcg gat tca atc ttc aac gag aga gac gag agc ttg aga agc gtt ttg    1296
Ala Asp Ser Ile Phe Asn Glu Arg Asp Glu Ser Leu Arg Ser Val Leu
            420             425             430


tcg gag atc agg ata aac ctc aga aca cgt aaa acc acg cgt cgt tcg    1344
Ser Glu Ile Arg Ile Asn Leu Arg Thr Arg Lys Thr Thr Arg Arg Ser
        435             440             445


ttg ttg gtt aac gag gat gta aat tta gag att ggt atg gtt aac cgg    1392
Leu Leu Val Asn Glu Asp Val Asn Leu Glu Ile Gly Met Val Asn Arg
    450             455             460


aac cgg tta gga aga aaa acc cgg ttc gcg ttt ttg gct att gct tat    1440
Asn Arg Leu Gly Arg Lys Thr Arg Phe Ala Phe Leu Ala Ile Ala Tyr
465             470             475             480


cct tgg cca aaa gtt tcc ggt ttc gct aag gtc gat ctt tgc acc ggt    1488
Pro Trp Pro Lys Val Ser Gly Phe Ala Lys Val Asp Leu Cys Thr Gly
            485             490             495


gag atg aaa aaa tat att tac ggc ggt gag aaa tat ggc ggc gaa ccg    1536
Glu Met Lys Lys Tyr Ile Tyr Gly Gly Glu Lys Tyr Gly Gly Glu Pro
            500             505             510


ttt ttc ttg ccc ggc aac tcc ggt aac ggc gaa gaa aat gaa gat gac    1584
Phe Phe Leu Pro Gly Asn Ser Gly Asn Gly Glu Glu Asn Glu Asp Asp
        515             520             525
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ggt tat ata ttt tgt cac gtt cat gac gaa gaa aca aag aca tca gag      1632
Gly Tyr Ile Phe Cys His Val His Asp Glu Glu Thr Lys Thr Ser Glu
    530                 535                 540

ctt cag att att aac gct gtt aat tta aag ctt gaa gct acg att aaa      1680
Leu Gln Ile Ile Asn Ala Val Asn Leu Lys Leu Glu Ala Thr Ile Lys
545                 550                 555                 560

cta ccg tct aga gta ccg tat ggg ttt cat ggc aca ttt gtg gat tcg     1728
Leu Pro Ser Arg Val Pro Tyr Gly Phe His Gly Thr Phe Val Asp Ser
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aat gaa ctc gtt gat caa tta taa                                      1752
Asn Glu Leu Val Asp Gln Leu
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              20                  25                  30

Lys Val Ile Lys Cys Thr Val Gln Ile Asp Val Thr Glu Leu Thr Lys
          35                  40                  45

Lys Arg Gln Leu Phe Thr Pro Arg Thr Thr Ala Thr Pro Pro Gln His
      50                  55                  60

Asn Pro Leu Arg Leu Asn Ile Phe Gln Lys Ala Ala Ala Ile Ala Ile
 65                  70                  75                  80

Asp Ala Ala Glu Arg Ala Leu Ile Ser His Glu Gln Asp Ser Pro Leu
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85   90   95

Pro Lys Thr Ala Asp Pro Arg Val Gln Ile Ala Gly Asn Tyr Ser Pro
        100   105   110

Val Pro Glu Ser Ser Val Arg Arg Asn Leu Thr Val Glu Gly Thr Ile
        115   120   125

Pro Asp Cys Ile Asp Gly Val Tyr Ile Arg Asn Gly Ala Asn Pro Met
    130   135   140

Phe Glu Pro Thr Ala Gly His His Leu Phe Asp Gly Asp Gly Met Val
145   150   155   160

His Ala Val Lys Ile Thr Asn Gly Ser Ala Ser Tyr Ala Cys Arg Phe
            165   170   175

Thr Lys Thr Glu Arg Leu Val Gln Glu Lys Arg Leu Gly Arg Pro Val
            180   185   190

Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Ser Gly Ile Ala Arg
        195   200   205

Leu Met Leu Phe Tyr Ala Arg Gly Leu Cys Gly Leu Ile Asn Asn Gln
    210   215   220

Asn Gly Val Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn Asn Arg
225   230   235   240

Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr Gln Leu Lys Ile Thr
            245   250   255

Gln Thr Gly Asp Leu Gln Thr Val Gly Arg Tyr Asp Phe Asp Gly Gln
        260   265   270

Leu Lys Ser Ala Met Ile Ala His Pro Lys Leu Asp Pro Val Thr Lys
        275   280   285

Glu Leu His Ala Leu Ser Tyr Asp Val Val Lys Lys Pro Tyr Leu Lys
    290   295   300

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Tyr Phe Arg Phe Ser Pro Asp Gly Val Lys Ser Pro Glu Leu Glu Ile
305                 310             315             320

Pro Leu Glu Thr Pro Thr Met Ile His Asp Phe Ala Ile Thr Glu Asn
            325             330             335

Phe Val Val Ile Pro Asp Gln Gln Val Val Phe Lys Leu Gly Glu Met
            340             345             350

Ile Ser Gly Lys Ser Pro Val Val Phe Asp Gly Glu Lys Val Ser Arg
        355             360             365

Leu Gly Ile Met Pro Lys Asp Ala Thr Glu Ala Ser Gln Ile Ile Trp
    370             375             380

Val Asn Ser Pro Glu Thr Phe Cys Phe His Leu Trp Asn Ala Trp Glu
385             390             395             400

Ser Pro Glu Thr Glu Glu Ile Val Val Ile Gly Ser Cys Met Ser Pro
            405             410             415

Ala Asp Ser Ile Phe Asn Glu Arg Asp Glu Ser Leu Arg Ser Val Leu
            420             425             430

Ser Glu Ile Arg Ile Asn Leu Arg Thr Arg Lys Thr Thr Arg Arg Ser
        435             440             445

Leu Leu Val Asn Glu Asp Val Asn Leu Glu Ile Gly Met Val Asn Arg
    450             455             460

Asn Arg Leu Gly Arg Lys Thr Arg Phe Ala Phe Leu Ala Ile Ala Tyr
465             470             475             480

Pro Trp Pro Lys Val Ser Gly Phe Ala Lys Val Asp Leu Cys Thr Gly
            485             490             495

Glu Met Lys Lys Tyr Ile Tyr Gly Gly Glu Lys Tyr Gly Gly Glu Pro
            500             505             510
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Phe Phe Leu Pro Gly Asn Ser Gly Asn Gly Glu Glu Asn Glu Asp Asp
        515                 520             525

Gly Tyr Ile Phe Cys His Val His Asp Glu Glu Thr Lys Thr Ser Glu
        530             535             540

Leu Gln Ile Ile Asn Ala Val Asn Leu Lys Leu Glu Ala Thr Ile Lys
545                 550             555                 560

Leu Pro Ser Arg Val Pro Tyr Gly Phe His Gly Thr Phe Val Asp Ser
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Asn Glu Leu Val Asp Gln Leu
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Met Asp Ser Val Ser Ser Ser Ser Phe Leu Ser Ser Thr Phe Ser Leu
 1               5                   10                  15

cat cac tct ctt ctt cgc cgc cga tct tcc tct cct act ctc ctc cgt    96
His His Ser Leu Leu Arg Arg Arg Ser Ser Ser Pro Thr Leu Leu Arg
                20                  25                  30

atc aac tcc gcc gtc gtc gaa gaa cgt tct cca atc aca aac cca agc   144
Ile Asn Ser Ala Val Val Glu Glu Arg Ser Pro Ile Thr Asn Pro Ser
            35                  40                  45

gac aac aat gat cgt cgt aac aaa ccc aaa aca ctc cac aac cga acc   192
Asp Asn Asn Asp Arg Arg Asn Lys Pro Lys Thr Leu His Asn Arg Thr
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                  50                    55                    60

        aat cac acc tta gtc tca tca cca ccg aaa ctc cga cca gaa atg act   240
        Asn His Thr Leu Val Ser Ser Pro Pro Lys Leu Arg Pro Glu Met Thr
        65                    70                    75                    80

        ctc gca aca gct ctc ttc acc acc gtc gaa gat gta atc aac acg ttc   288
        Leu Ala Thr Ala Leu Phe Thr Thr Val Glu Asp Val Ile Asn Thr Phe
                              85                    90                    95

        atc gat cca cct tca cgt cct tcc gtt gat cca aaa cat gtc ctc tct   336
        Ile Asp Pro Pro Ser Arg Pro Ser Val Asp Pro Lys His Val Leu Ser
                              100                   105                   110

        gat aac ttc gct cct gtc ctc gac gag ctt cct cca aca gac tgt gaa   384
        Asp Asn Phe Ala Pro Val Leu Asp Glu Leu Pro Pro Thr Asp Cys Glu
                              115                   120                   125

        atc atc cac ggc act ctt cca ctg tca ctt aac ggc gct tac atc cgt   432
        Ile Ile His Gly Thr Leu Pro Leu Ser Leu Asn Gly Ala Tyr Ile Arg
                              130                   135                   140

        aac ggt cca aat cca cag ttt ctc cct cgt ggt cct tac cat ctc ttc   480
        Asn Gly Pro Asn Pro Gln Phe Leu Pro Arg Gly Pro Tyr His Leu Phe
        145                   150                   155                   160

        gac ggc gac ggt atg ctt cac gcc ata aaa atc cac aac ggt aaa gcc   528
        Asp Gly Asp Gly Met Leu His Ala Ile Lys Ile His Asn Gly Lys Ala
                              165                   170                   175

        act ctc tgt agc aga tac gtc aag act tat aaa tac aac gtc gag aaa   576
        Thr Leu Cys Ser Arg Tyr Val Lys Thr Tyr Lys Tyr Asn Val Glu Lys
                              180                   185                   190

        caa acc gga gct ccg gtt atg cct aac gtg ttt tcc gga ttc aac ggt   624
        Gln Thr Gly Ala Pro Val Met Pro Asn Val Phe Ser Gly Phe Asn Gly
                              195                   200                   205

        gta acg gcg tca gta gct cgt gga gct tta acg gca gct agg gtt tta   672
        Val Thr Ala Ser Val Ala Arg Gly Ala Leu Thr Ala Ala Arg Val Leu
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210   215   220

acc gga cag tat aat ccg gtt aac ggc att ggt tta gct aat aca agt   720
Thr Gly Gln Tyr Asn Pro Val Asn Gly Ile Gly Leu Ala Asn Thr Ser
225   230   235   240

cta gct ttc ttc agt aac cgt ctc ttt gct tta ggt gaa tct gat tta   768
Leu Ala Phe Phe Ser Asn Arg Leu Phe Ala Leu Gly Glu Ser Asp Leu
                    245   250   255

ccc tac gcc gtc cga tta acc gaa tca gga gat att gaa acg atc gga   816
Pro Tyr Ala Val Arg Leu Thr Glu Ser Gly Asp Ile Glu Thr Ile Gly
                260   265   270

cgg tac gat ttc gac ggg aaa tta gcg atg agt atg aca gct cat cct   864
Arg Tyr Asp Phe Asp Gly Lys Leu Ala Met Ser Met Thr Ala His Pro
            275   280   285

aaa acc gat cca ata acc gga gaa act ttc gct ttc cgg tac ggt ccg   912
Lys Thr Asp Pro Ile Thr Gly Glu Thr Phe Ala Phe Arg Tyr Gly Pro
        290   295   300

gtt cca ccg ttt tta aca tat ttc cgg ttt gat tcc gcc ggg aaa aaa   960
Val Pro Pro Phe Leu Thr Tyr Phe Arg Phe Asp Ser Ala Gly Lys Lys
305   310   315   320

caa aga gac gtt ccg ata ttc tcg atg acg tct ccg tcg ttt ctc cat   1008
Gln Arg Asp Val Pro Ile Phe Ser Met Thr Ser Pro Ser Phe Leu His
                325   330   335

gac ttc gcg atc acg aaa cgt cac gcg att ttc gca gag att cag ctt   1056
Asp Phe Ala Ile Thr Lys Arg His Ala Ile Phe Ala Glu Ile Gln Leu
            340   345   350

ggc atg agg atg aac atg ttg gat ttg gtt ctc gaa ggt ggt tct ccg   1104
Gly Met Arg Met Asn Met Leu Asp Leu Val Leu Glu Gly Gly Ser Pro
            355   360   365

gtt ggt act gat aac gga aaa act cca agg ctt gga gtg att cct aag   1152
Val Gly Thr Asp Asn Gly Lys Thr Pro Arg Leu Gly Val Ile Pro Lys

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          370                    375                    380

tac gcc gga gat gag tcg gag atg aaa tgg ttc gaa gtt cct gga ttc      1200
Tyr Ala Gly Asp Glu Ser Glu Met Lys Trp Phe Glu Val Pro Gly Phe
385                    390                    395                    400

aat atc att cac gct att aat gct tgg gat gaa gat gat gga aac agc      1248
Asn Ile Ile His Ala Ile Asn Ala Trp Asp Glu Asp Asp Gly Asn Ser
                   405                    410                    415

gtc gtt ttg att gca ccg aat att atg tcg att gaa cat act tta gag      1296
Val Val Leu Ile Ala Pro Asn Ile Met Ser Ile Glu His Thr Leu Glu
                   420                    425                    430

agg atg gat ctg gtt cat gct ttg gtg gag aag gtg aag atc gat ctc      1344
Arg Met Asp Leu Val His Ala Leu Val Glu Lys Val Lys Ile Asp Leu
                   435                    440                    445

gtc acc ggg att gtg aga cgt cat ccg atc tca gcg agg aat ctc gat      1392
Val Thr Gly Ile Val Arg Arg His Pro Ile Ser Ala Arg Asn Leu Asp
    450                    455                    460

ttc gct gtg att aat ccg gcg ttt ctc ggg aga tgt agc agg tac gtt      1440
Phe Ala Val Ile Asn Pro Ala Phe Leu Gly Arg Cys Ser Arg Tyr Val
465                    470                    475                    480

tac gcg gcg att gga gat ccg atg ccg aag atc tcc ggt gtg gtg aag      1488
Tyr Ala Ala Ile Gly Asp Pro Met Pro Lys Ile Ser Gly Val Val Lys
                   485                    490                    495

ctt gat gtg tct aaa gga gat cgg gat gat tgt acg gtg gcc cgt aga      1536
Leu Asp Val Ser Lys Gly Asp Arg Asp Asp Cys Thr Val Ala Arg Arg
                   500                    505                    510

atg tac ggt tca ggt tgt tac ggc gga gaa ccg ttt ttc gta gct agg      1584
Met Tyr Gly Ser Gly Cys Tyr Gly Gly Glu Pro Phe Phe Val Ala Arg
                   515                    520                    525

gat cct ggt aat ccg gag gcg gag gag gat gat ggt tat gtg gtg acg      1632
Asp Pro Gly Asn Pro Glu Ala Glu Glu Asp Asp Gly Tyr Val Val Thr
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            530                    535                    540

tat gtt cac gat gaa gtg act gga gaa tcg aag ttt ctg gtg atg gac    1680
Tyr Val His Asp Glu Val Thr Gly Glu Ser Lys Phe Leu Val Met Asp
545                    550                    555                    560

gct aaa tcg ccg gag ctt gaa atc gtc gcc gcc gtg agg ttg ccg cga    1728
Ala Lys Ser Pro Glu Leu Glu Ile Val Ala Ala Val Arg Leu Pro Arg
                    565                    570                    575

agg gtt ccg tac gga ttc cat ggg tta ttt gtc aag gaa agt gac ctt    1776
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                    580                    585                    590

aat aag ctt taa                                                    1788
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Ile Asn Ser Ala Val Val Glu Glu Arg Ser Pro Ile Thr Asn Pro Ser
                   35                    40                    45

Asp Asn Asn Asp Arg Arg Asn Lys Pro Lys Thr Leu His Asn Arg Thr
                   50                    55                    60

Asn His Thr Leu Val Ser Ser Pro Pro Lys Leu Arg Pro Glu Met Thr
 65                    70                    75                    80
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Leu Ala Thr Ala Leu Phe Thr Thr Val Glu Asp Val Ile Asn Thr Phe
     85   90   95

Ile Asp Pro Pro Ser Arg Pro Ser Val Asp Pro Lys His Val Leu Ser
    100   105   110

Asp Asn Phe Ala Pro Val Leu Asp Glu Leu Pro Pro Thr Asp Cys Glu
   115   120   125

Ile Ile His Gly Thr Leu Pro Leu Ser Leu Asn Gly Ala Tyr Ile Arg
   130   135   140

Asn Gly Pro Asn Pro Gln Phe Leu Pro Arg Gly Pro Tyr His Leu Phe
145   150   155   160

Asp Gly Asp Gly Met Leu His Ala Ile Lys Ile His Asn Gly Lys Ala
    165   170   175

Thr Leu Cys Ser Arg Tyr Val Lys Thr Tyr Lys Tyr Asn Val Glu Lys
    180   185   190

Gln Thr Gly Ala Pro Val Met Pro Asn Val Phe Ser Gly Phe Asn Gly
    195   200   205

Val Thr Ala Ser Val Ala Arg Gly Ala Leu Thr Ala Ala Arg Val Leu
   210   215   220

Thr Gly Gln Tyr Asn Pro Val Asn Gly Ile Gly Leu Ala Asn Thr Ser
225   230   235   240

Leu Ala Phe Phe Ser Asn Arg Leu Phe Ala Leu Gly Glu Ser Asp Leu
    245   250   255

Pro Tyr Ala Val Arg Leu Thr Glu Ser Gly Asp Ile Glu Thr Ile Gly
   260   265   270

Arg Tyr Asp Phe Asp Gly Lys Leu Ala Met Ser Met Thr Ala His Pro
   275   280   285

Lys Thr Asp Pro Ile Thr Gly Glu Thr Phe Ala Phe Arg Tyr Gly Pro

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                290                   295                   300

        Val Pro Pro Phe Leu Thr Tyr Phe Arg Phe Asp Ser Ala Gly Lys Lys
        305                   310                   315                   320

        Gln Arg Asp Val Pro Ile Phe Ser Met Thr Ser Pro Ser Phe Leu His
                          325                   330                   335

        Asp Phe Ala Ile Thr Lys Arg His Ala Ile Phe Ala Glu Ile Gln Leu
                          340                   345                   350

        Gly Met Arg Met Asn Met Leu Asp Leu Val Leu Glu Gly Gly Ser Pro
                          355                   360                   365

        Val Gly Thr Asp Asn Gly Lys Thr Pro Arg Leu Gly Val Ile Pro Lys
                 370                   375                   380

        Tyr Ala Gly Asp Glu Ser Glu Met Lys Trp Phe Glu Val Pro Gly Phe
        385                   390                   395                   400

        Asn Ile Ile His Ala Ile Asn Ala Trp Asp Glu Asp Asp Gly Asn Ser
                          405                   410                   415

        Val Val Leu Ile Ala Pro Asn Ile Met Ser Ile Glu His Thr Leu Glu
                          420                   425                   430

        Arg Met Asp Leu Val His Ala Leu Val Glu Lys Val Lys Ile Asp Leu
                 435                   440                   445

        Val Thr Gly Ile Val Arg Arg His Pro Ile Ser Ala Arg Asn Leu Asp
                 450                   455                   460

        Phe Ala Val Ile Asn Pro Ala Phe Leu Gly Arg Cys Ser Arg Tyr Val
        465                   470                   475                   480

        Tyr Ala Ala Ile Gly Asp Pro Met Pro Lys Ile Ser Gly Val Val Lys
                          485                   490                   495

        Leu Asp Val Ser Lys Gly Asp Arg Asp Asp Cys Thr Val Ala Arg Arg
                 500                   505                   510
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Met Tyr Gly Ser Gly Cys Tyr Gly Gly Glu Pro Phe Phe Val Ala Arg
        515   520   525

Asp Pro Gly Asn Pro Glu Ala Glu Glu Asp Asp Gly Tyr Val Val Thr
        530   535   540

Tyr Val His Asp Glu Val Thr Gly Glu Ser Lys Phe Leu Val Met Asp
545   550   555   560

Ala Lys Ser Pro Glu Leu Glu Ile Val Ala Ala Val Arg Leu Pro Arg
            565   570   575

Arg Val Pro Tyr Gly Phe His Gly Leu Phe Val Lys Glu Ser Asp Leu
            580   585   590

Asn Lys Leu
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Met Ala Ser Phe Thr Ala Thr Ala Ala Val Ser Gly Arg Trp Leu Gly
 1   5   10   15

ggc aat cat act cag ccg cca tta tcg tct tct caa agc tcc gac ttg   96
Gly Asn His Thr Gln Pro Pro Leu Ser Ser Ser Gln Ser Ser Asp Leu
            20   25   30

agt tat tgt agc tcc tta cct atg gcc agt cgt gtc aca cgt aag ctc   144
Ser Tyr Cys Ser Ser Leu Pro Met Ala Ser Arg Val Thr Arg Lys Leu

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                 35   40   45

        aat gtt tca tct gcg ctt cac act cct cca gct ctt cat ttc cct aag   192
        Asn Val Ser Ser Ala Leu His Thr Pro Pro Ala Leu His Phe Pro Lys
             50   55   60

        caa tca tca aac tct ccc gcc att gtt gtt aag ccc aaa gcc aaa gaa   240
        Gln Ser Ser Asn Ser Pro Ala Ile Val Val Lys Pro Lys Ala Lys Glu
         65   70   75   80

        tcc aac act aaa cag atg aat ttg ttc cag aga gcg gcg gcg gca gcg   288
        Ser Asn Thr Lys Gln Met Asn Leu Phe Gln Arg Ala Ala Ala Ala Ala
                         85   90   95

        ttg gac gcg gcg gag ggt ttc ctt gtc agc cac gag aag cta cac ccg   336
        Leu Asp Ala Ala Glu Gly Phe Leu Val Ser His Glu Lys Leu His Pro
                     100   105   110

        ctt cct aaa acg gct gat cct agt gtt cag atc gcc gga aat ttt gct   384
        Leu Pro Lys Thr Ala Asp Pro Ser Val Gln Ile Ala Gly Asn Phe Ala
                     115   120   125

        ccg gtg aat gaa cag ccc gtc cgg cgt aat ctt ccg gtg gtc gga aaa   432
        Pro Val Asn Glu Gln Pro Val Arg Arg Asn Leu Pro Val Val Gly Lys
             130   135   140

        ctt ccc gat tcc atc aaa gga gtg tat gtg cgc aac gga gct aac cca   480
        Leu Pro Asp Ser Ile Lys Gly Val Tyr Val Arg Asn Gly Ala Asn Pro
        145   150   155   160

        ctt cac gag ccg gtg aca ggt cac cac ttc ttc gac gga gac ggt atg   528
        Leu His Glu Pro Val Thr Gly His His Phe Phe Asp Gly Asp Gly Met
                         165   170   175

        gtt cac gcc gtc aaa ttc gaa cac ggt tca gct agc tac gct tgc cgg   576
        Val His Ala Val Lys Phe Glu His Gly Ser Ala Ser Tyr Ala Cys Arg
                     180   185   190

        ttt act cag act aac cgg ttt gtt cag gaa cgt caa ttg ggt cga ccg   624
        Phe Thr Gln Thr Asn Arg Phe Val Gln Glu Arg Gln Leu Gly Arg Pro
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            195               200               205

gtt ttc ccc aaa gcc atc ggt gag ctt cac ggc cac acc ggt att gcc    672
Val Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Thr Gly Ile Ala
    210               215               220

cga ctc atg cta ttc tac gcc aga gct gca gcc ggt ata gtc gac ccg    720
Arg Leu Met Leu Phe Tyr Ala Arg Ala Ala Ala Gly Ile Val Asp Pro
225               230               235               240

gca cac gga acc ggt gta gct aac gcc ggt ttg gtc tat ttc aat ggc    768
Ala His Gly Thr Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn Gly
                245               250               255

cgg tta ttg gct atg tcg gag gat gat tta cct tac caa gtt cag atc    816
Arg Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr Gln Val Gln Ile
                260               265               270

act ccc aat gga gat tta aaa acc gtt ggt cgg ttc gat ttt gat gga    864
Thr Pro Asn Gly Asp Leu Lys Thr Val Gly Arg Phe Asp Phe Asp Gly
                275               280               285

caa tta gaa tcc aca atg att gcc cac ccg aaa gtc gac ccg gaa tcc    912
Gln Leu Glu Ser Thr Met Ile Ala His Pro Lys Val Asp Pro Glu Ser
    290               295               300

ggt gaa ctc ttc gct tta agc tac gac gtc gtt tca aag cct tac cta    960
Gly Glu Leu Phe Ala Leu Ser Tyr Asp Val Val Ser Lys Pro Tyr Leu
305               310               315               320

aaa tac ttc cga ttc tca ccg gac gga act aaa tca ccg gac gtc gag   1008
Lys Tyr Phe Arg Phe Ser Pro Asp Gly Thr Lys Ser Pro Asp Val Glu
                325               330               335

att cag ctt gat cag cca acg atg atg cac gat ttc gcg att aca gag   1056
Ile Gln Leu Asp Gln Pro Thr Met Met His Asp Phe Ala Ile Thr Glu
                340               345               350

aac ttc gtc gtc gta cct gac cag caa gtc gtt ttc aag ctg ccg gag   1104
Asn Phe Val Val Val Pro Asp Gln Gln Val Val Phe Lys Leu Pro Glu
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355   360   365

atg atc cgc ggt ggg tct ccg gtg gtt tac gac aag aac aag gtc gca   1152
Met Ile Arg Gly Gly Ser Pro Val Val Tyr Asp Lys Asn Lys Val Ala
   370   375   380

aga ttc ggg att tta gac aaa tac gcc gaa gat tca tcg aac att aag   1200
Arg Phe Gly Ile Leu Asp Lys Tyr Ala Glu Asp Ser Ser Asn Ile Lys
385   390   395   400

tgg att gat gct cca gat tgc ttc tgc ttc cat ctc tgg aac gct tgg   1248
Trp Ile Asp Ala Pro Asp Cys Phe Cys Phe His Leu Trp Asn Ala Trp
                   405   410   415

gaa gag cca gaa aca gat gaa gtc gtc gtg ata ggg tcc tgt atg act   1296
Glu Glu Pro Glu Thr Asp Glu Val Val Val Ile Gly Ser Cys Met Thr
                   420   425   430

cca cca gac tca att ttc aac gag tct gac gag aat ctc aag agt gtc   1344
Pro Pro Asp Ser Ile Phe Asn Glu Ser Asp Glu Asn Leu Lys Ser Val
                   435   440   445

ctg tct gaa atc cgc ctg aat ctc aaa acc ggt gaa tca act cgc cgt   1392
Leu Ser Glu Ile Arg Leu Asn Leu Lys Thr Gly Glu Ser Thr Arg Arg
   450   455   460

ccg atc atc tcc aac gaa gat caa caa gtc aac ctc gaa gca ggg atg   1440
Pro Ile Ile Ser Asn Glu Asp Gln Gln Val Asn Leu Glu Ala Gly Met
465   470   475   480

gtc aac aga aac atg ctc ggc cgt aaa acc aaa ttc gct tac ttg gct   1488
Val Asn Arg Asn Met Leu Gly Arg Lys Thr Lys Phe Ala Tyr Leu Ala
                   485   490   495

tta gcc gag ccg tgg cct aaa gtc tca gga ttc gct aaa gtt gat ctc   1536
Leu Ala Glu Pro Trp Pro Lys Val Ser Gly Phe Ala Lys Val Asp Leu
                   500   505   510

act act gga gaa gtt aag aaa cat ctt tac ggc gat aac cgt tac gga   1584
Thr Thr Gly Glu Val Lys Lys His Leu Tyr Gly Asp Asn Arg Tyr Gly

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                 515                    520                    525

gga gag cct ctg ttt ctc ccc gga gaa gga gga gag gaa gac gaa gga    1632
Gly Glu Pro Leu Phe Leu Pro Gly Glu Gly Gly Glu Glu Asp Glu Gly
    530                    535                    540


tac atc ctc tgt ttc gtt cac gac gag aag aca tgg aaa tcg gag tta    1680
Tyr Ile Leu Cys Phe Val His Asp Glu Lys Thr Trp Lys Ser Glu Leu
545                    550                    555                    560


cag ata gtt aac gcc gtt agc tta gag gtt gaa gca acg gtt aaa ctt    1728
Gln Ile Val Asn Ala Val Ser Leu Glu Val Glu Ala Thr Val Lys Leu
                    565                    570                    575


ccg tca agg gtt ccg tac gga ttt cac ggt aca ttc atc gga gcc gat    1776
Pro Ser Arg Val Pro Tyr Gly Phe His Gly Thr Phe Ile Gly Ala Asp
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Asp Leu Ala Lys Gln Val Val
                    595                    600



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  1                   5                    10                    15


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                    20                    25                    30


Ser Tyr Cys Ser Ser Leu Pro Met Ala Ser Arg Val Thr Arg Lys Leu
                    35                    40                    45


Asn Val Ser Ser Ala Leu His Thr Pro Pro Ala Leu His Phe Pro Lys
    50                    55                    60
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Gln Ser Ser Asn Ser Pro Ala Ile Val Val Lys Pro Lys Ala Lys Glu
65   70   75   80

Ser Asn Thr Lys Gln Met Asn Leu Phe Gln Arg Ala Ala Ala Ala Ala
                85   90   95

Leu Asp Ala Ala Glu Gly Phe Leu Val Ser His Glu Lys Leu His Pro
            100   105   110

Leu Pro Lys Thr Ala Asp Pro Ser Val Gln Ile Ala Gly Asn Phe Ala
            115   120   125

Pro Val Asn Glu Gln Pro Val Arg Arg Asn Leu Pro Val Val Gly Lys
    130   135   140

Leu Pro Asp Ser Ile Lys Gly Val Tyr Val Arg Asn Gly Ala Asn Pro
145   150   155   160

Leu His Glu Pro Val Thr Gly His His Phe Phe Asp Gly Asp Gly Met
            165   170   175

Val His Ala Val Lys Phe Glu His Gly Ser Ala Ser Tyr Ala Cys Arg
            180   185   190

Phe Thr Gln Thr Asn Arg Phe Val Gln Glu Arg Gln Leu Gly Arg Pro
    195   200   205

Val Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Thr Gly Ile Ala
    210   215   220

Arg Leu Met Leu Phe Tyr Ala Arg Ala Ala Ala Gly Ile Val Asp Pro
225   230   235   240

Ala His Gly Thr Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn Gly
            245   250   255

Arg Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr Gln Val Gln Ile
    260   265   270

Thr Pro Asn Gly Asp Leu Lys Thr Val Gly Arg Phe Asp Phe Asp Gly
   275   280   285

Gln Leu Glu Ser Thr Met Ile Ala His Pro Lys Val Asp Pro Glu Ser
   290   295   300

Gly Glu Leu Phe Ala Leu Ser Tyr Asp Val Val Ser Lys Pro Tyr Leu
305   310   315   320

Lys Tyr Phe Arg Phe Ser Pro Asp Gly Thr Lys Ser Pro Asp Val Glu
        325   330   335

Ile Gln Leu Asp Gln Pro Thr Met Met His Asp Phe Ala Ile Thr Glu
    340   345   350

Asn Phe Val Val Val Pro Asp Gln Gln Val Val Phe Lys Leu Pro Glu
    355   360   365

Met Ile Arg Gly Gly Ser Pro Val Val Tyr Asp Lys Asn Lys Val Ala
   370   375   380

Arg Phe Gly Ile Leu Asp Lys Tyr Ala Glu Asp Ser Ser Asn Ile Lys
385   390   395   400

Trp Ile Asp Ala Pro Asp Cys Phe Cys Phe His Leu Trp Asn Ala Trp
        405   410   415

Glu Glu Pro Glu Thr Asp Glu Val Val Val Ile Gly Ser Cys Met Thr
       420   425   430

Pro Pro Asp Ser Ile Phe Asn Glu Ser Asp Glu Asn Leu Lys Ser Val
    435   440   445

Leu Ser Glu Ile Arg Leu Asn Leu Lys Thr Gly Glu Ser Thr Arg Arg
   450   455   460

Pro Ile Ile Ser Asn Glu Asp Gln Gln Val Asn Leu Glu Ala Gly Met
465   470   475   480

Val Asn Arg Asn Met Leu Gly Arg Lys Thr Lys Phe Ala Tyr Leu Ala

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                485                   490                   495

Leu Ala Glu Pro Trp Pro Lys Val Ser Gly Phe Ala Lys Val Asp Leu
            500                   505                   510

Thr Thr Gly Glu Val Lys Lys His Leu Tyr Gly Asp Asn Arg Tyr Gly
            515                   520                   525

Gly Glu Pro Leu Phe Leu Pro Gly Glu Gly Gly Glu Glu Asp Glu Gly
        530                   535                   540

Tyr Ile Leu Cys Phe Val His Asp Glu Lys Thr Trp Lys Ser Glu Leu
545                   550                   555                   560

Gln Ile Val Asn Ala Val Ser Leu Glu Val Glu Ala Thr Val Lys Leu
                565                   570                   575

Pro Ser Arg Val Pro Tyr Gly Phe His Gly Thr Phe Ile Gly Ala Asp
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Asp Leu Ala Lys Gln Val Val
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 1               5                   10                  15

aga ccc tcc aag ggt ttc tcc tcg aag ctt ctc gat ctt ctc gag aga   96
Arg Pro Ser Lys Gly Phe Ser Ser Lys Leu Leu Asp Leu Leu Glu Arg
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                  20                        25                        30

ctt gtt gtc aag ctc atg cac gat gct tct ctc cct ctc cac tac ctc    144
Leu Val Val Lys Leu Met His Asp Ala Ser Leu Pro Leu His Tyr Leu
            35                        40                        45


tca ggc aac ttc gct ccc atc cgt gat gaa act cct ccc gtc aag gat    192
Ser Gly Asn Phe Ala Pro Ile Arg Asp Glu Thr Pro Pro Val Lys Asp
        50                        55                        60


ctc ccc gtc cat gga ttt ctt ccc gaa tgc ttg aat ggt gaa ttt gtg    240
Leu Pro Val His Gly Phe Leu Pro Glu Cys Leu Asn Gly Glu Phe Val
65                        70                        75                        80


agg gtt ggt cca aac ccc aag ttt gat gct gtc gct gga tat cac tgg    288
Arg Val Gly Pro Asn Pro Lys Phe Asp Ala Val Ala Gly Tyr His Trp
                    85                        90                        95


ttt gat gga gat ggg atg att cat ggg gta cgc atc aaa gat ggg aaa    336
Phe Asp Gly Asp Gly Met Ile His Gly Val Arg Ile Lys Asp Gly Lys
                100                       105                       110


gct act tat gtt tct cga tat gtt aag aca tca cgt ctt aag cag gaa    384
Ala Thr Tyr Val Ser Arg Tyr Val Lys Thr Ser Arg Leu Lys Gln Glu
            115                       120                       125


gag ttc ttc gga gct gcc aaa ttc atg aag att ggt gac ctt aag ggg    432
Glu Phe Phe Gly Ala Ala Lys Phe Met Lys Ile Gly Asp Leu Lys Gly
        130                       135                       140


ttt ttc gga ttg cta atg gtc aat gtc caa cag ctg aga acg aag ctc    480
Phe Phe Gly Leu Leu Met Val Asn Val Gln Gln Leu Arg Thr Lys Leu
145                       150                       155                       160


aaa ata ttg gac aac act tat gga aat gga act gcc aat aca gca ctc    528
Lys Ile Leu Asp Asn Thr Tyr Gly Asn Gly Thr Ala Asn Thr Ala Leu
                165                       170                       175


gta tat cac cat gga aaa ctt cta gca tta cag gag gca gat aag ccg    576
Val Tyr His His Gly Lys Leu Leu Ala Leu Gln Glu Ala Asp Lys Pro
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                 180                    185                    190

tac gtc atc aaa gtt ttg gaa gat gga gac ctg caa act ctt ggt ata    624
Tyr Val Ile Lys Val Leu Glu Asp Gly Asp Leu Gln Thr Leu Gly Ile
         195                    200                    205


ata gat tat gac aag aga ttg acc cac tcc ttc act gct cac cca aaa    672
Ile Asp Tyr Asp Lys Arg Leu Thr His Ser Phe Thr Ala His Pro Lys
         210                    215                    220


gtt gac ccg gtt acg ggt gaa atg ttt aca ttc ggc tat tcg cat acg   720
Val Asp Pro Val Thr Gly Glu Met Phe Thr Phe Gly Tyr Ser His Thr
225                    230                    235                    240


cca cct tat ctc aca tac aga gtt atc tcg aaa gat ggc att atg cat    768
Pro Pro Tyr Leu Thr Tyr Arg Val Ile Ser Lys Asp Gly Ile Met His
                 245                    250                    255


gac cca gtc cca att act ata tca gag cct atc atg atg cat gat ttt    816
Asp Pro Val Pro Ile Thr Ile Ser Glu Pro Ile Met Met His Asp Phe
                 260                    265                    270


gct att act gag act tat gca atc ttc atg gat ctt cct atg cac ttc    864
Ala Ile Thr Glu Thr Tyr Ala Ile Phe Met Asp Leu Pro Met His Phe
                 275                    280                    285


agg cca aag gaa atg gtg aaa gag aag aaa atg ata tac tca ttt gat    912
Arg Pro Lys Glu Met Val Lys Glu Lys Lys Met Ile Tyr Ser Phe Asp
         290                    295                    300


ccc aca aaa aag gct cgt ttt ggt gtt ctt cca cgc tat gcc aag gat    960
Pro Thr Lys Lys Ala Arg Phe Gly Val Leu Pro Arg Tyr Ala Lys Asp
305                    310                    315                    320


gaa ctt atg att aga tgg ttt gag ctt ccc aac tgc ttt att ttc cac   1008
Glu Leu Met Ile Arg Trp Phe Glu Leu Pro Asn Cys Phe Ile Phe His
                 325                    330                    335


aac gcc aat gct tgg gaa gaa gag gat gaa gtc gtc ctc atc act tgt   1056
Asn Ala Asn Ala Trp Glu Glu Glu Asp Glu Val Val Leu Ile Thr Cys
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	340			345			350	

cgt ctt gag aat cca gat ctt gac atg gtc agt ggg aaa gtg aaa gaa   1104
Arg Leu Glu Asn Pro Asp Leu Asp Met Val Ser Gly Lys Val Lys Glu
      355   360   365

aaa ctc gaa aat ttt ggc aac gaa ctg tac gaa atg aga ttc aac atg   1152
Lys Leu Glu Asn Phe Gly Asn Glu Leu Tyr Glu Met Arg Phe Asn Met
    370   375   380

aaa acg ggc tca gct tct caa aaa aaa cta tcc gca tct gcg gtt gat   1200
Lys Thr Gly Ser Ala Ser Gln Lys Lys Leu Ser Ala Ser Ala Val Asp
385   390   395   400

ttc ccc aga atc aat gag tgc tac acc gga aag aaa cag aga tac gta   1248
Phe Pro Arg Ile Asn Glu Cys Tyr Thr Gly Lys Lys Gln Arg Tyr Val
        405   410   415

tat gga aca att ctg gac agt atc gca aag gtt acc gga atc atc aag   1296
Tyr Gly Thr Ile Leu Asp Ser Ile Ala Lys Val Thr Gly Ile Ile Lys
        420   425   430

ttt gat ctg cat gca gaa gct gag aca ggg aaa aga atg ctg gaa gta   1344
Phe Asp Leu His Ala Glu Ala Glu Thr Gly Lys Arg Met Leu Glu Val
      435   440   445

gga ggt aat atc aaa gga ata tat gac ctg gga gaa ggc aga tat ggt   1392
Gly Gly Asn Ile Lys Gly Ile Tyr Asp Leu Gly Glu Gly Arg Tyr Gly
    450   455   460

tca gag gct atc tat gtt ccg cgt gag aca gca gaa gaa gac gac ggt   1440
Ser Glu Ala Ile Tyr Val Pro Arg Glu Thr Ala Glu Glu Asp Asp Gly
465   470   475   480

tac ttg ata ttc ttt gtt cat gat gaa aac aca ggg aaa tca tgc gtg   1488
Tyr Leu Ile Phe Phe Val His Asp Glu Asn Thr Gly Lys Ser Cys Val
        485   490   495

act gtg ata gac gca aaa aca atg tcg gct gaa ccg gtg gca gtg gtg   1536
Thr Val Ile Asp Ala Lys Thr Met Ser Ala Glu Pro Val Ala Val Val

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Glu Leu Pro His Arg Val Pro Tyr Gly Phe His Ala Leu Phe Val Thr
        515   520   525

gag gaa caa ctc cag gaa caa act ctt ata taa   1617
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        530   535
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                20   25   30

Leu Val Val Lys Leu Met His Asp Ala Ser Leu Pro Leu His Tyr Leu
            35   40   45

Ser Gly Asn Phe Ala Pro Ile Arg Asp Glu Thr Pro Pro Val Lys Asp
    50   55   60

Leu Pro Val His Gly Phe Leu Pro Glu Cys Leu Asn Gly Glu Phe Val
65   70   75   80

Arg Val Gly Pro Asn Pro Lys Phe Asp Ala Val Ala Gly Tyr His Trp
                85   90   95

Phe Asp Gly Asp Gly Met Ile His Gly Val Arg Ile Lys Asp Gly Lys
                100   105   110

Ala Thr Tyr Val Ser Arg Tyr Val Lys Thr Ser Arg Leu Lys Gln Glu
            115   120   125
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Glu Phe Phe Gly Ala Ala Lys Phe Met Lys Ile Gly Asp Leu Lys Gly
  130   135   140

Phe Phe Gly Leu Leu Met Val Asn Val Gln Gln Leu Arg Thr Lys Leu
145   150   155   160

Lys Ile Leu Asp Asn Thr Tyr Gly Asn Gly Thr Ala Asn Thr Ala Leu
        165   170   175

Val Tyr His His Gly Lys Leu Leu Ala Leu Gln Glu Ala Asp Lys Pro
        180   185   190

Tyr Val Ile Lys Val Leu Glu Asp Gly Asp Leu Gln Thr Leu Gly Ile
      195   200   205

Ile Asp Tyr Asp Lys Arg Leu Thr His Ser Phe Thr Ala His Pro Lys
    210   215   220

Val Asp Pro Val Thr Gly Glu Met Phe Thr Phe Gly Tyr Ser His Thr
225   230   235   240

Pro Pro Tyr Leu Thr Tyr Arg Val Ile Ser Lys Asp Gly Ile Met His
        245   250   255

Asp Pro Val Pro Ile Thr Ile Ser Glu Pro Ile Met Met His Asp Phe
        260   265   270

Ala Ile Thr Glu Thr Tyr Ala Ile Phe Met Asp Leu Pro Met His Phe
      275   280   285

Arg Pro Lys Glu Met Val Lys Glu Lys Lys Met Ile Tyr Ser Phe Asp
    290   295   300

Pro Thr Lys Lys Ala Arg Phe Gly Val Leu Pro Arg Tyr Ala Lys Asp
305   310   315   320

Glu Leu Met Ile Arg Trp Phe Glu Leu Pro Asn Cys Phe Ile Phe His
        325   330   335

Asn Ala Asn Ala Trp Glu Glu Glu Asp Glu Val Val Leu Ile Thr Cys
   340   345   350

Arg Leu Glu Asn Pro Asp Leu Asp Met Val Ser Gly Lys Val Lys Glu
   355   360   365

Lys Leu Glu Asn Phe Gly Asn Glu Leu Tyr Glu Met Arg Phe Asn Met
  370   375   380

Lys Thr Gly Ser Ala Ser Gln Lys Lys Leu Ser Ala Ser Ala Val Asp
385   390   395   400

Phe Pro Arg Ile Asn Glu Cys Tyr Thr Gly Lys Lys Gln Arg Tyr Val
    405   410   415

Tyr Gly Thr Ile Leu Asp Ser Ile Ala Lys Val Thr Gly Ile Ile Lys
    420   425   430

Phe Asp Leu His Ala Glu Ala Glu Thr Gly Lys Arg Met Leu Glu Val
   435   440   445

Gly Gly Asn Ile Lys Gly Ile Tyr Asp Leu Gly Glu Gly Arg Tyr Gly
  450   455   460

Ser Glu Ala Ile Tyr Val Pro Arg Glu Thr Ala Glu Glu Asp Asp Gly
465   470   475   480

Tyr Leu Ile Phe Phe Val His Asp Glu Asn Thr Gly Lys Ser Cys Val
    485   490   495

Thr Val Ile Asp Ala Lys Thr Met Ser Ala Glu Pro Val Ala Val Val
    500   505   510

Glu Leu Pro His Arg Val Pro Tyr Gly Phe His Ala Leu Phe Val Thr
   515   520   525

Glu Glu Gln Leu Gln Glu Gln Thr Leu Ile
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1               5                   10                  15

cgt tct cat tta ctt cca caa ccc aaa aat gca aat att tct cga cga    96
Arg Ser His Leu Leu Pro Gln Pro Lys Asn Ala Asn Ile Ser Arg Arg
            20                  25                  30

att ctc att aac cct ttc aag ata ccg aca ctt cct gat ctc act tct   144
Ile Leu Ile Asn Pro Phe Lys Ile Pro Thr Leu Pro Asp Leu Thr Ser
            35                  40                  45

ccg gtt ccg tca ccg gtt aag ctc aaa cca acg tat cca aac tta aac   192
Pro Val Pro Ser Pro Val Lys Leu Lys Pro Thr Tyr Pro Asn Leu Asn
        50                  55                  60

ctt ctt cag aag cta gcg gct acg atg ctc gac aag att gag tcc tct   240
Leu Leu Gln Lys Leu Ala Ala Thr Met Leu Asp Lys Ile Glu Ser Ser
65                  70                  75                  80

atc gtt att cct atg gag cag aat cgc ccg ctt cct aaa ccg acc gac   288
Ile Val Ile Pro Met Glu Gln Asn Arg Pro Leu Pro Lys Pro Thr Asp
                85                  90                  95

ccg gcg gtt caa tta tca ggt aac ttc gct ccg gtt aat gaa tgt ccg   336
Pro Ala Val Gln Leu Ser Gly Asn Phe Ala Pro Val Asn Glu Cys Pro
            100                 105                 110

gtt cag aac ggt tta gaa gtg gtt ggt cag att cct tct tgt cta aaa   384
Val Gln Asn Gly Leu Glu Val Val Gly Gln Ile Pro Ser Cys Leu Lys
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115   120   125

gga gtt tac atc cgt aac ggt gca aac cct atg ttt ccg ccg tta gcc   432
Gly Val Tyr Ile Arg Asn Gly Ala Asn Pro Met Phe Pro Pro Leu Ala
    130   135   140

gga cat cat tta ttt gac ggt gac gga atg att cac gcc gtt agt atc   480
Gly His His Leu Phe Asp Gly Asp Gly Met Ile His Ala Val Ser Ile
145   150   155   160

ggt ttt gat aac cag gtt agt tac agc tgc cgg tac act aaa aca aac   528
Gly Phe Asp Asn Gln Val Ser Tyr Ser Cys Arg Tyr Thr Lys Thr Asn
                    165   170   175

cgg ctt gtt caa gaa acc gcg ctt gga cga tcg gtt ttc cct aaa cca   576
Arg Leu Val Gln Glu Thr Ala Leu Gly Arg Ser Val Phe Pro Lys Pro
                    180   185   190

atc ggc gag ctt cac ggc cat tcc ggt cta gct cga ctc gct ctc ttc   624
Ile Gly Glu Leu His Gly His Ser Gly Leu Ala Arg Leu Ala Leu Phe
                    195   200   205

acg gct cga gct ggg atc ggt cta gtg gac ggg aca cgt ggc atg ggc   672
Thr Ala Arg Ala Gly Ile Gly Leu Val Asp Gly Thr Arg Gly Met Gly
    210   215   220

gta gct aac gcc ggt gtg gtt ttc ttt aac ggc agg tta tta gcc atg   720
Val Ala Asn Ala Gly Val Val Phe Phe Asn Gly Arg Leu Leu Ala Met
225   230   235   240

tca gaa gat gat ctt cct tac caa gtg aag atc gac ggt caa gga gat   768
Ser Glu Asp Asp Leu Pro Tyr Gln Val Lys Ile Asp Gly Gln Gly Asp
                    245   250   255

ctt gag acg atc gga cgg ttc gga ttc gat gac cag att gac tct tca   816
Leu Glu Thr Ile Gly Arg Phe Gly Phe Asp Asp Gln Ile Asp Ser Ser
                    260   265   270

gtg ata gcg cat cct aag gtg gac gcg acc aca gga gat ctc cat aca   864
Val Ile Ala His Pro Lys Val Asp Ala Thr Thr Gly Asp Leu His Thr

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                 275                    280                    285

ctg agc tac aac gtt ttg aag aaa cct cat ctc agg tat ctt aaa ttc   912
Leu Ser Tyr Asn Val Leu Lys Lys Pro His Leu Arg Tyr Leu Lys Phe
    290                    295                    300

aac acg tgc ggg aaa aag aca cgt gac gtg gag atc acg ctc cct gaa   960
Asn Thr Cys Gly Lys Lys Thr Arg Asp Val Glu Ile Thr Leu Pro Glu
305                    310                    315                    320

cca acg atg att cat gat ttc gcg ata acc gag aat ttt gtc gtt ata  1008
Pro Thr Met Ile His Asp Phe Ala Ile Thr Glu Asn Phe Val Val Ile
                    325                    330                    335

ccg gat cag caa atg gta ttc aaa tta tcc gaa atg att cgg ggc ggg  1056
Pro Asp Gln Gln Met Val Phe Lys Leu Ser Glu Met Ile Arg Gly Gly
                340                    345                    350

tca ccc gtt atc tac gtt aaa gaa aaa atg gcg aga ttt gga gtt ttg  1104
Ser Pro Val Ile Tyr Val Lys Glu Lys Met Ala Arg Phe Gly Val Leu
                355                    360                    365

tca aag cag gat ctg acc ggg tcg gat ata aat tgg gtt gat gta ccg  1152
Ser Lys Gln Asp Leu Thr Gly Ser Asp Ile Asn Trp Val Asp Val Pro
    370                    375                    380

gat tgt ttc tgt ttc cat cta tgg aat gcg tgg gaa gag aga acc gaa  1200
Asp Cys Phe Cys Phe His Leu Trp Asn Ala Trp Glu Glu Arg Thr Glu
385                    390                    395                    400

gag gga gac cca gtt atc gtc gta atc ggg tca tgt atg agc cca ccc  1248
Glu Gly Asp Pro Val Ile Val Val Ile Gly Ser Cys Met Ser Pro Pro
                    405                    410                    415

gac acg atc ttt agt gaa tca gga gaa cca acc cgg gtt gaa tta agt  1296
Asp Thr Ile Phe Ser Glu Ser Gly Glu Pro Thr Arg Val Glu Leu Ser
                420                    425                    430

gag atc cgg tta aac atg cgt aca aaa gaa tcg aac cgt aag gtt atc  1344
Glu Ile Arg Leu Asn Met Arg Thr Lys Glu Ser Asn Arg Lys Val Ile
```

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            435                   440                   445

gta acc gga gtg aat tta gaa gcg ggt cac ata aac cgt agt tac gtg    1392
Val Thr Gly Val Asn Leu Glu Ala Gly His Ile Asn Arg Ser Tyr Val
    450                   455                   460


ggc cgg aaa agc cag ttc gtt tac ata gca ata gcc gat cct tgg ccc    1440
Gly Arg Lys Ser Gln Phe Val Tyr Ile Ala Ile Ala Asp Pro Trp Pro
465                   470                   475                   480


aaa tgc agt ggc att gcg aag gta gat ata caa aac ggc acc gtt tca    1488
Lys Cys Ser Gly Ile Ala Lys Val Asp Ile Gln Asn Gly Thr Val Ser
                485                   490                   495


gag ttt aat tac gga ccg agc cgg ttc ggt gga gaa ccg tgc ttt gta    1536
Glu Phe Asn Tyr Gly Pro Ser Arg Phe Gly Gly Glu Pro Cys Phe Val
                500                   505                   510


ccg gag gga gaa gga gaa gaa gac aaa ggt tat gta atg ggg ttt gtg    1584
Pro Glu Gly Glu Gly Glu Glu Asp Lys Gly Tyr Val Met Gly Phe Val
                515                   520                   525


aga gac gaa gag aaa gac gag tcg gag ttt gtg gtg gtc gac gcg acg    1632
Arg Asp Glu Glu Lys Asp Glu Ser Glu Phe Val Val Val Asp Ala Thr
    530                   535                   540


gat atg aag caa gtc gcg gcg gtg cgc ttg ccg gag agg gta cct tat    1680
Asp Met Lys Gln Val Ala Ala Val Arg Leu Pro Glu Arg Val Pro Tyr
545                   550                   555                   560


ggt ttc cat gga acg ttc gtg agc gag aat cag ttg aag gaa caa gtt    1728
Gly Phe His Gly Thr Phe Val Ser Glu Asn Gln Leu Lys Glu Gln Val
                565                   570                   575


ttc tga                                                            1734
Phe
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<210> 10
<211> 577

<212> PRT
<213> Arabidopsis thaliana

<400> 10
Met Gln His Ser Leu Arg Ser Asp Leu Leu Pro Thr Lys Thr Ser Pro
 1   5   10   15

Arg Ser His Leu Leu Pro Gln Pro Lys Asn Ala Asn Ile Ser Arg Arg
            20   25   30

Ile Leu Ile Asn Pro Phe Lys Ile Pro Thr Leu Pro Asp Leu Thr Ser
            35   40   45

Pro Val Pro Ser Pro Val Lys Leu Lys Pro Thr Tyr Pro Asn Leu Asn
        50   55   60

Leu Leu Gln Lys Leu Ala Ala Thr Met Leu Asp Lys Ile Glu Ser Ser
65   70   75   80

Ile Val Ile Pro Met Glu Gln Asn Arg Pro Leu Pro Lys Pro Thr Asp
                85   90   95

Pro Ala Val Gln Leu Ser Gly Asn Phe Ala Pro Val Asn Glu Cys Pro
                100   105   110

Val Gln Asn Gly Leu Glu Val Val Gly Gln Ile Pro Ser Cys Leu Lys
            115   120   125

Gly Val Tyr Ile Arg Asn Gly Ala Asn Pro Met Phe Pro Pro Leu Ala
        130   135   140

Gly His His Leu Phe Asp Gly Asp Gly Met Ile His Ala Val Ser Ile
145   150   155   160

Gly Phe Asp Asn Gln Val Ser Tyr Ser Cys Arg Tyr Thr Lys Thr Asn
                165   170   175

Arg Leu Val Gln Glu Thr Ala Leu Gly Arg Ser Val Phe Pro Lys Pro
            180   185   190

Ile Gly Glu Leu His Gly His Ser Gly Leu Ala Arg Leu Ala Leu Phe
    195   200   205

Thr Ala Arg Ala Gly Ile Gly Leu Val Asp Gly Thr Arg Gly Met Gly
    210   215   220

Val Ala Asn Ala Gly Val Val Phe Phe Asn Gly Arg Leu Leu Ala Met
225   230   235   240

Ser Glu Asp Asp Leu Pro Tyr Gln Val Lys Ile Asp Gly Gln Gly Asp
          245   250   255

Leu Glu Thr Ile Gly Arg Phe Gly Phe Asp Asp Gln Ile Asp Ser Ser
         260   265   270

Val Ile Ala His Pro Lys Val Asp Ala Thr Thr Gly Asp Leu His Thr
      275   280   285

Leu Ser Tyr Asn Val Leu Lys Lys Pro His Leu Arg Tyr Leu Lys Phe
    290   295   300

Asn Thr Cys Gly Lys Lys Thr Arg Asp Val Glu Ile Thr Leu Pro Glu
305   310   315   320

Pro Thr Met Ile His Asp Phe Ala Ile Thr Glu Asn Phe Val Val Ile
        325   330   335

Pro Asp Gln Gln Met Val Phe Lys Leu Ser Glu Met Ile Arg Gly Gly
        340   345   350

Ser Pro Val Ile Tyr Val Lys Glu Lys Met Ala Arg Phe Gly Val Leu
    355   360   365

Ser Lys Gln Asp Leu Thr Gly Ser Asp Ile Asn Trp Val Asp Val Pro
    370   375   380

Asp Cys Phe Cys Phe His Leu Trp Asn Ala Trp Glu Glu Arg Thr Glu
385   390   395   400

Glu Gly Asp Pro Val Ile Val Val Ile Gly Ser Cys Met Ser Pro Pro

```
                405                     410                     415

    Asp Thr Ile Phe Ser Glu Ser Gly Glu Pro Thr Arg Val Glu Leu Ser
                420                     425                     430

    Glu Ile Arg Leu Asn Met Arg Thr Lys Glu Ser Asn Arg Lys Val Ile
                435                     440                     445

    Val Thr Gly Val Asn Leu Glu Ala Gly His Ile Asn Arg Ser Tyr Val
                450                     455                     460

    Gly Arg Lys Ser Gln Phe Val Tyr Ile Ala Ile Ala Asp Pro Trp Pro
    465                     470                     475                     480

    Lys Cys Ser Gly Ile Ala Lys Val Asp Ile Gln Asn Gly Thr Val Ser
                485                     490                     495

    Glu Phe Asn Tyr Gly Pro Ser Arg Phe Gly Gly Glu Pro Cys Phe Val
                500                     505                     510

    Pro Glu Gly Glu Gly Glu Glu Asp Lys Gly Tyr Val Met Gly Phe Val
                515                     520                     525

    Arg Asp Glu Glu Lys Asp Glu Ser Glu Phe Val Val Val Asp Ala Thr
    530                     535                     540

    Asp Met Lys Gln Val Ala Ala Val Arg Leu Pro Glu Arg Val Pro Tyr
    545                     550                     555                     560

    Gly Phe His Gly Thr Phe Val Ser Glu Asn Gln Leu Lys Glu Gln Val
                565                     570                     575

    Phe
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<220>
<221> CDS
<222> (1)..(1839)

<400> 11

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atg cct tca tca gct tca aac act tgg ttt aac gcc aca ctc cca tct    48
Met Pro Ser Ser Ala Ser Asn Thr Trp Phe Asn Ala Thr Leu Pro Ser
 1               5                   10                  15


ccc ccc ttc aaa gac cta cct tcc aca tct tct ccc aca aac tta ctt    96
Pro Pro Phe Lys Asp Leu Pro Ser Thr Ser Ser Pro Thr Asn Leu Leu
                20                  25                  30


cct tta agg aaa aca tcc tct tcc aac acc atc aca tgt tcc ctt caa   144
Pro Leu Arg Lys Thr Ser Ser Ser Asn Thr Ile Thr Cys Ser Leu Gln
            35                  40                  45


aca ctc cac ttc ccc aaa cag tac caa cca aca tcc aca tcc aca tcc   192
Thr Leu His Phe Pro Lys Gln Tyr Gln Pro Thr Ser Thr Ser Thr Ser
         50                  55                  60


aca gcc acc acc aca aca ccc acc cca atc aaa act acc acc atc acc   240
Thr Ala Thr Thr Thr Thr Pro Thr Pro Ile Lys Thr Thr Thr Ile Thr
 65                  70                  75                  80


acc acc aca ccg ccc agg gaa acc aac cct ctc tct gac acc aac caa   288
Thr Thr Thr Pro Pro Arg Glu Thr Asn Pro Leu Ser Asp Thr Asn Gln
                85                  90                  95


cca tta cct caa aaa tgg aac ttt ctc cag aaa gcc gct gcc acg gcc   336
Pro Leu Pro Gln Lys Trp Asn Phe Leu Gln Lys Ala Ala Ala Thr Ala
                100                 105                 110


ttg gac ctg gtc gaa acg gcg ctc gtc tcg cac gag cgc aaa cac ccg   384
Leu Asp Leu Val Glu Thr Ala Leu Val Ser His Glu Arg Lys His Pro
            115                 120                 125


ctc ccc aaa acg gcg gac ccg agg gtc caa atc gcc ggg aac ttc gcg   432
Leu Pro Lys Thr Ala Asp Pro Arg Val Gln Ile Ala Gly Asn Phe Ala
         130                 135                 140
```

ccg gtg ccg gag cat gcc gcg gat caa gga ctc ccg gtg gtc gga aaa 480
Pro Val Pro Glu His Ala Ala Asp Gln Gly Leu Pro Val Val Gly Lys
145   150   155   160

atc ccc aaa tgc att gac ggc gtg tac gtg cgc aac ggt gcc aat ccg 528
Ile Pro Lys Cys Ile Asp Gly Val Tyr Val Arg Asn Gly Ala Asn Pro
              165   170   175

ctc tac gag cct gtg gcc ggg cac cac ttc ttc gac ggc gac ggc atg 576
Leu Tyr Glu Pro Val Ala Gly His His Phe Phe Asp Gly Asp Gly Met
              180   185   190

gtc cac gcc gtg aag ttc acg aac ggc gcc gcc agc tac gcc tgc cgc 624
Val His Ala Val Lys Phe Thr Asn Gly Ala Ala Ser Tyr Ala Cys Arg
              195   200   205

ttc acc gag acg cag cgt ctc tcg cag gag aaa tct cta ggc cgc ccg 672
Phe Thr Glu Thr Gln Arg Leu Ser Gln Glu Lys Ser Leu Gly Arg Pro
   210   215   220

gtg ttc ccg aag gcc atc ggg gag ctc cac ggc cac tcc ggc atc gcg 720
Val Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Ser Gly Ile Ala
225   230   235   240

cgg ctc ctc ctc ttc tac gcg cgc ggt ctc ttc ggg ctc gtt gat ggg 768
Arg Leu Leu Leu Phe Tyr Ala Arg Gly Leu Phe Gly Leu Val Asp Gly
              245   250   255

tcc cag ggc atg ggc gtg gcg aac gcc ggt ctc gtc tac ttc aac aac 816
Ser Gln Gly Met Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn Asn
              260   265   270

cac ctc ttg gcc atg tcc gaa gac gat tta ccc tac cac gtg aga atc 864
His Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr His Val Arg Ile
              275   280   285

acc cct aac ggc gac tta acc acc gtt ggc cgt tac gac ttc aac ggg 912
Thr Pro Asn Gly Asp Leu Thr Thr Val Gly Arg Tyr Asp Phe Asn Gly
   290   295   300

```
cag ctc aac tca aca atg atc gcc cac ccg aaa ctg gac ccc gtc gac    960
Gln Leu Asn Ser Thr Met Ile Ala His Pro Lys Leu Asp Pro Val Asp
305             310             315             320

ggc gac ctc cac gcg ctc agc tac gac gtc att cag aag cct tac ctc    1008
Gly Asp Leu His Ala Leu Ser Tyr Asp Val Ile Gln Lys Pro Tyr Leu
                325             330             335

aag tac ttc cgt ttc tcc ccc gac ggc gtc aag tcc ccc gac gtg gaa    1056
Lys Tyr Phe Arg Phe Ser Pro Asp Gly Val Lys Ser Pro Asp Val Glu
                340             345             350

atc ccc ctg aag gag ccc acc atg atg cac gat ttc gcc ata acg gag    1104
Ile Pro Leu Lys Glu Pro Thr Met Met His Asp Phe Ala Ile Thr Glu
                355             360             365

aat ttc gtc gtc gtc ccc gac cag cag gtg gtc ttc aaa cta acg gag    1152
Asn Phe Val Val Val Pro Asp Gln Gln Val Val Phe Lys Leu Thr Glu
        370             375             380

atg atc acc ggc ggg tcc ccc gtg gtc tac gac aag aac aaa acc tca    1200
Met Ile Thr Gly Gly Ser Pro Val Val Tyr Asp Lys Asn Lys Thr Ser
385             390             395             400

cgg ttt ggg att ctg cac aag aat gcg aag gac gcg aat gcg atg cgg    1248
Arg Phe Gly Ile Leu His Lys Asn Ala Lys Asp Ala Asn Ala Met Arg
                405             410             415

tgg atc gac gcg ccg gat tgt ttc tgc ttc cac ctc tgg aac gcg tgg    1296
Trp Ile Asp Ala Pro Asp Cys Phe Cys Phe His Leu Trp Asn Ala Trp
                420             425             430

gag gag ccc gaa acc gag gag gtt gtg gtg att ggg tcc tgc atg acc    1344
Glu Glu Pro Glu Thr Glu Glu Val Val Val Ile Gly Ser Cys Met Thr
        435             440             445

cct gcg gac tcc att ttc aac gaa tgc gag gag agt ttg aag agc gtg    1392
Pro Ala Asp Ser Ile Phe Asn Glu Cys Glu Glu Ser Leu Lys Ser Val
        450             455             460
```

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ctg tca gag ata agg ctg aac ttg agg acc ggc aag tcc act cgg cgc     1440
Leu Ser Glu Ile Arg Leu Asn Leu Arg Thr Gly Lys Ser Thr Arg Arg
465             470             475             480

ccc att atc tcc gac gcc gaa caa gtg aac ctg gaa gcc ggc atg gtg     1488
Pro Ile Ile Ser Asp Ala Glu Gln Val Asn Leu Glu Ala Gly Met Val
                485             490             495

aac aga aac aag ctc gga agg aag acc cag ttc gcg tat ctg gct ctg     1536
Asn Arg Asn Lys Leu Gly Arg Lys Thr Gln Phe Ala Tyr Leu Ala Leu
                500             505             510

gcg gag ccc tgg ccc aaa gtc tcg ggc ttt gcg aaa gtt gat ttg ctg     1584
Ala Glu Pro Trp Pro Lys Val Ser Gly Phe Ala Lys Val Asp Leu Leu
            515             520             525

agt ggg gaa gtg aag aag tac atg tat gga gaa gag aag ttc ggt ggg     1632
Ser Gly Glu Val Lys Lys Tyr Met Tyr Gly Glu Glu Lys Phe Gly Gly
        530             535             540

gag cct ctg ttt ctt ccc aac ggc caa aaa gaa gac gat ggg tat att     1680
Glu Pro Leu Phe Leu Pro Asn Gly Gln Lys Glu Asp Asp Gly Tyr Ile
545             550             555             560

ctg gca ttc gtg cac gac gag aaa gaa tgg aaa tcc gag ctg cag att     1728
Leu Ala Phe Val His Asp Glu Lys Glu Trp Lys Ser Glu Leu Gln Ile
                565             570             575

gtg aat gcc caa aat tta aag ctc gaa gct tcc atc aaa ctc ccc tct     1776
Val Asn Ala Gln Asn Leu Lys Leu Glu Ala Ser Ile Lys Leu Pro Ser
                580             585             590

cgt gtt ccc tac ggt ttt cat gga act ttc att cat tcc aag gat ttg     1824
Arg Val Pro Tyr Gly Phe His Gly Thr Phe Ile His Ser Lys Asp Leu
                595             600             605

agg aaa caa gct tga                                                   1839
Arg Lys Gln Ala
610
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<210> 12
<211> 612
<212> PRT
<213> Vigna unguiculata

<400> 12
Met Pro Ser Ser Ala Ser Asn Thr Trp Phe Asn Ala Thr Leu Pro Ser
1   5   10   15

Pro Pro Phe Lys Asp Leu Pro Ser Thr Ser Ser Pro Thr Asn Leu Leu
                20   25   30

Pro Leu Arg Lys Thr Ser Ser Ser Asn Thr Ile Thr Cys Ser Leu Gln
            35   40   45

Thr Leu His Phe Pro Lys Gln Tyr Gln Pro Thr Ser Thr Ser Thr Ser
        50   55   60

Thr Ala Thr Thr Thr Thr Pro Thr Pro Ile Lys Thr Thr Thr Ile Thr
65   70   75   80

Thr Thr Thr Pro Pro Arg Glu Thr Asn Pro Leu Ser Asp Thr Asn Gln
                85   90   95

Pro Leu Pro Gln Lys Trp Asn Phe Leu Gln Lys Ala Ala Ala Thr Ala
                100   105   110

Leu Asp Leu Val Glu Thr Ala Leu Val Ser His Glu Arg Lys His Pro
            115   120   125

Leu Pro Lys Thr Ala Asp Pro Arg Val Gln Ile Ala Gly Asn Phe Ala
        130   135   140

Pro Val Pro Glu His Ala Ala Asp Gln Gly Leu Pro Val Val Gly Lys
145   150   155   160

Ile Pro Lys Cys Ile Asp Gly Val Tyr Val Arg Asn Gly Ala Asn Pro
                165   170   175

Leu Tyr Glu Pro Val Ala Gly His His Phe Phe Asp Gly Asp Gly Met
        180   185   190

Val His Ala Val Lys Phe Thr Asn Gly Ala Ala Ser Tyr Ala Cys Arg
        195   200   205

Phe Thr Glu Thr Gln Arg Leu Ser Gln Glu Lys Ser Leu Gly Arg Pro
   210   215   220

Val Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Ser Gly Ile Ala
225   230   235   240

Arg Leu Leu Leu Phe Tyr Ala Arg Gly Leu Phe Gly Leu Val Asp Gly
        245   250   255

Ser Gln Gly Met Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn Asn
        260   265   270

His Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr His Val Arg Ile
        275   280   285

Thr Pro Asn Gly Asp Leu Thr Thr Val Gly Arg Tyr Asp Phe Asn Gly
   290   295   300

Gln Leu Asn Ser Thr Met Ile Ala His Pro Lys Leu Asp Pro Val Asp
305   310   315   320

Gly Asp Leu His Ala Leu Ser Tyr Asp Val Ile Gln Lys Pro Tyr Leu
        325   330   335

Lys Tyr Phe Arg Phe Ser Pro Asp Gly Val Lys Ser Pro Asp Val Glu
        340   345   350

Ile Pro Leu Lys Glu Pro Thr Met Met His Asp Phe Ala Ile Thr Glu
        355   360   365

Asn Phe Val Val Val Pro Asp Gln Gln Val Val Phe Lys Leu Thr Glu
   370   375   380

Met Ile Thr Gly Gly Ser Pro Val Val Tyr Asp Lys Asn Lys Thr Ser
385   390   395   400

Arg Phe Gly Ile Leu His Lys Asn Ala Lys Asp Ala Asn Ala Met Arg
                405   410   415

Trp Ile Asp Ala Pro Asp Cys Phe Cys Phe His Leu Trp Asn Ala Trp
                420   425   430

Glu Glu Pro Glu Thr Glu Glu Val Val Val Ile Gly Ser Cys Met Thr
                435   440   445

Pro Ala Asp Ser Ile Phe Asn Glu Cys Glu Glu Ser Leu Lys Ser Val
        450   455   460

Leu Ser Glu Ile Arg Leu Asn Leu Arg Thr Gly Lys Ser Thr Arg Arg
465   470   475   480

Pro Ile Ile Ser Asp Ala Glu Gln Val Asn Leu Glu Ala Gly Met Val
                485   490   495

Asn Arg Asn Lys Leu Gly Arg Lys Thr Gln Phe Ala Tyr Leu Ala Leu
                500   505   510

Ala Glu Pro Trp Pro Lys Val Ser Gly Phe Ala Lys Val Asp Leu Leu
        515   520   525

Ser Gly Glu Val Lys Lys Tyr Met Tyr Gly Glu Glu Lys Phe Gly Gly
        530   535   540

Glu Pro Leu Phe Leu Pro Asn Gly Gln Lys Glu Asp Asp Gly Tyr Ile
545   550   555   560

Leu Ala Phe Val His Asp Glu Lys Glu Trp Lys Ser Glu Leu Gln Ile
                565   570   575

Val Asn Ala Gln Asn Leu Lys Leu Glu Ala Ser Ile Lys Leu Pro Ser
                580   585   590

Arg Val Pro Tyr Gly Phe His Gly Thr Phe Ile His Ser Lys Asp Leu

```
                595                600                605

Arg Lys Gln Ala
        610


<210> 13
<211> 1815
<212> DNA
<213> Zea mays

<220>
<221> CDS
<222> (1)..(1815)

<400> 13
atg cag ggt ctc gcc ccg ccc acc tct gtt tcc ata cac cgg cac ctg      48
Met Gln Gly Leu Ala Pro Pro Thr Ser Val Ser Ile His Arg His Leu
 1               5                   10                  15


ccg gcc cgg tcc agg gcc cgg gcc tcc aat tcc gtc agg ttc tcg ccg      96
Pro Ala Arg Ser Arg Ala Arg Ala Ser Asn Ser Val Arg Phe Ser Pro
             20                  25                  30


cgc gcc gtc agc tcc gtg ccg ccc gcc gag tgc ctc cag gcg ccg ttc     144
Arg Ala Val Ser Ser Val Pro Pro Ala Glu Cys Leu Gln Ala Pro Phe
         35                  40                  45


cac aag ccc gtc gcc gac ctg cct gcg ccg tcc agg aag ccc gcc gcc     192
His Lys Pro Val Ala Asp Leu Pro Ala Pro Ser Arg Lys Pro Ala Ala
     50                  55                  60


att gcc gtc cca ggg cac gcc gcg gcg ccg agg aaa gcg gag ggc ggc     240
Ile Ala Val Pro Gly His Ala Ala Ala Pro Arg Lys Ala Glu Gly Gly
 65                  70                  75                  80


aag aag cag ctc aac ttg ttc cag cgc gcc gcg gcg gcc gcg ctc gac     288
Lys Lys Gln Leu Asn Leu Phe Gln Arg Ala Ala Ala Ala Ala Leu Asp
                 85                  90                  95
```

gcg ttc gag gaa ggg ttc gtg gcc aac gtc ctc gag cgg ccc cac ggg   336
Ala Phe Glu Glu Gly Phe Val Ala Asn Val Leu Glu Arg Pro His Gly
             100   105   110

ctg ccc agc acg gcc gac ccg gcc gtg cag atc gcc ggc aac ttc gcg   384
Leu Pro Ser Thr Ala Asp Pro Ala Val Gln Ile Ala Gly Asn Phe Ala
             115   120   125

ccc gtc ggg gag agg ccg ccc gtg cac gag ctc ccc gtc tcc ggc cgc   432
Pro Val Gly Glu Arg Pro Pro Val His Glu Leu Pro Val Ser Gly Arg
             130   135   140

atc ccg ccc ttc atc gac ggg gtc tac gcg cgc aac ggc gcc aac ccc   480
Ile Pro Pro Phe Ile Asp Gly Val Tyr Ala Arg Asn Gly Ala Asn Pro
145   150   155   160

tgc ttc gac ccc gtc gcg ggg cac cac ctc ttc gac ggc gac ggc atg   528
Cys Phe Asp Pro Val Ala Gly His His Leu Phe Asp Gly Asp Gly Met
             165   170   175

gtg cac gcg ctg cgg ata cgc aac ggc gcc gcc gag tcc tac gcc tgc   576
Val His Ala Leu Arg Ile Arg Asn Gly Ala Ala Glu Ser Tyr Ala Cys
             180   185   190

cgc ttc acg gag acc gcg cgc ctg cgc cag gag cgc gcg atc ggc cgc   624
Arg Phe Thr Glu Thr Ala Arg Leu Arg Gln Glu Arg Ala Ile Gly Arg
             195   200   205

ccc gtc ttc ccc aag gcc att ggc gag ctg cac ggg cac tcc ggg atc   672
Pro Val Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Ser Gly Ile
             210   215   220

gcg cgc ctc gcc ctg ttc tac gcg cgc gcc gcg tgc ggc ctc gtg gac   720
Ala Arg Leu Ala Leu Phe Tyr Ala Arg Ala Ala Cys Gly Leu Val Asp
225   230   235   240

ccc tcg gcc ggc acc ggc gtg gcc aac gcc ggc ctc gtc tac ttc aac   768
Pro Ser Ala Gly Thr Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn
             245   250   255

```
ggc cgc ctg ctc gcc atg tcc gag gac gac ctc ccc tac cac gtc cgc    816
Gly Arg Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr His Val Arg
            260             265             270
```

```
gtg gcg gac gac ggc gac ctc gag acc gtc ggc cgc tac gac ttc gac    864
Val Ala Asp Asp Gly Asp Leu Glu Thr Val Gly Arg Tyr Asp Phe Asp
        275             280             285
```

```
ggg cag ctc ggc tgc gcc atg atc gcg cac ccc aag ctg gac ccg gcc    912
Gly Gln Leu Gly Cys Ala Met Ile Ala His Pro Lys Leu Asp Pro Ala
    290             295             300
```

```
acc ggg gag ctc cac gcg ctc agc tac gac gtc atc aag agg ccg tac    960
Thr Gly Glu Leu His Ala Leu Ser Tyr Asp Val Ile Lys Arg Pro Tyr
305             310             315             320
```

```
ctc aag tac ttc tac ttc agg ccc gac ggc acc aag tcc gac gac gtg    1008
Leu Lys Tyr Phe Tyr Phe Arg Pro Asp Gly Thr Lys Ser Asp Asp Val
                325             330             335
```

```
gag atc ccg ctg gag cag ccc acg atg atc cac gac ttc gcc atc acc    1056
Glu Ile Pro Leu Glu Gln Pro Thr Met Ile His Asp Phe Ala Ile Thr
            340             345             350
```

```
gag aac ttc gtg gtt gtg ccc gac cac cag gtg gtg ttc aag ctc cag    1104
Glu Asn Phe Val Val Val Pro Asp His Gln Val Val Phe Lys Leu Gln
            355             360             365
```

```
gag atg ctg cgc ggc ggg tcg ccc gtg gtg ctg gac aag gag aag acg    1152
Glu Met Leu Arg Gly Gly Ser Pro Val Val Leu Asp Lys Glu Lys Thr
            370             375             380
```

```
tcg cgg ttc ggc gtg ctc ccc aag cac gcc gcg gac gcg tcg gag atg    1200
Ser Arg Phe Gly Val Leu Pro Lys His Ala Ala Asp Ala Ser Glu Met
385             390             395             400
```

```
gcg tgg gtg gac gtg ccg gac tgc ttc tgc ttc cac ctg tgg aac gcg    1248
Ala Trp Val Asp Val Pro Asp Cys Phe Cys Phe His Leu Trp Asn Ala
            405             410             415
```

```
tgg gag gac gag gcg acg ggc gag gtg gtg gtg atc ggc tcc tgc atg   1296
Trp Glu Asp Glu Ala Thr Gly Glu Val Val Val Ile Gly Ser Cys Met
            420                 425             430


acc ccc gcc gac tcc atc ttc aac gag tcc gac gag cgc ctg gag agc   1344
Thr Pro Ala Asp Ser Ile Phe Asn Glu Ser Asp Glu Arg Leu Glu Ser
            435                 440             445


gtg ctg acc gag atc cgc ctg gac gcg cgc acg ggc cgg tcc acg cgc   1392
Val Leu Thr Glu Ile Arg Leu Asp Ala Arg Thr Gly Arg Ser Thr Arg
            450                 455             460


cgc gcc gtc ctg ccg ccg tcg cag cag gag aac ctg gag gtg ggc atg   1440
Arg Ala Val Leu Pro Pro Ser Gln Gln Glu Asn Leu Glu Val Gly Met
465                 470                 475             480


gtg aac cgc aac ctg ctg ggc cgc gag agc cgg tac gcg tac ctc gcg   1488
Val Asn Arg Asn Leu Leu Gly Arg Glu Ser Arg Tyr Ala Tyr Leu Ala
            485                 490             495


gtg gcg gag ccg tgg ccc aag gag tcg ggc ttc gcc aag gag gac ctg   1536
Val Ala Glu Pro Trp Pro Lys Glu Ser Gly Phe Ala Lys Glu Asp Leu
            500                 505             510


tcc acg ggc gag ctc acc aag ttc gag tac ggc gag ggc cgg ttc ggc   1584
Ser Thr Gly Glu Leu Thr Lys Phe Glu Tyr Gly Glu Gly Arg Phe Gly
            515                 520             525


ggc gag ccc tgc ttc gtt ccc atg gac ccg gcc gcg gcc cac ccg cgc   1632
Gly Glu Pro Cys Phe Val Pro Met Asp Pro Ala Ala Ala His Pro Arg
            530                 535             540


ggc gag gac gac ggg tac gtg ctc acc ttc gtc cac gac gag cgc gcc   1680
Gly Glu Asp Asp Gly Tyr Val Leu Thr Phe Val His Asp Glu Arg Ala
545                 550                 555             560


ggc acg tcg gag cta ctt gtg gtc aat gcc gcc gac atc cgg ctg gag   1728
Gly Thr Ser Glu Leu Leu Val Val Asn Ala Ala Asp Ile Arg Leu Glu
            565                 570             575
```

```
gcc acg gtt cag ctg ccg tcc cgc gtg ccc ttc ggc ttc cac ggc acc    1776
Ala Thr Val Gln Leu Pro Ser Arg Val Pro Phe Gly Phe His Gly Thr
            580                 585                 590
```

```
ttc atc acg ggc cag gag ctc gag gcc cag gcg gcc tga              1815
Phe Ile Thr Gly Gln Glu Leu Glu Ala Gln Ala Ala
            595                 600                 605
```

<210> 14
<211> 604
<212> PRT
<213> Zea mays

<400> 14

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Met Gln Gly Leu Ala Pro Pro Thr Ser Val Ser Ile His Arg His Leu
 1               5                   10                  15
```

```
Pro Ala Arg Ser Arg Ala Arg Ala Ser Asn Ser Val Arg Phe Ser Pro
            20                  25                  30
```

```
Arg Ala Val Ser Ser Val Pro Pro Ala Glu Cys Leu Gln Ala Pro Phe
            35                  40                  45
```

```
His Lys Pro Val Ala Asp Leu Pro Ala Pro Ser Arg Lys Pro Ala Ala
        50                  55                  60
```

```
Ile Ala Val Pro Gly His Ala Ala Ala Pro Arg Lys Ala Glu Gly Gly
 65             70                  75                  80
```

```
Lys Lys Gln Leu Asn Leu Phe Gln Arg Ala Ala Ala Ala Ala Leu Asp
                85                  90                  95
```

```
Ala Phe Glu Glu Gly Phe Val Ala Asn Val Leu Glu Arg Pro His Gly
                100                 105                 110
```

```
Leu Pro Ser Thr Ala Asp Pro Ala Val Gln Ile Ala Gly Asn Phe Ala
            115                 120                 125
```

```
Pro Val Gly Glu Arg Pro Pro Val His Glu Leu Pro Val Ser Gly Arg
```

```
              130                    135                    140

Ile Pro Pro Phe Ile Asp Gly Val Tyr Ala Arg Asn Gly Ala Asn Pro
145                 150                 155                 160

Cys Phe Asp Pro Val Ala Gly His His Leu Phe Asp Gly Asp Gly Met
                165                 170                 175

Val His Ala Leu Arg Ile Arg Asn Gly Ala Ala Glu Ser Tyr Ala Cys
                180                 185                 190

Arg Phe Thr Glu Thr Ala Arg Leu Arg Gln Glu Arg Ala Ile Gly Arg
                195                 200                 205

Pro Val Phe Pro Lys Ala Ile Gly Glu Leu His Gly His Ser Gly Ile
     210                 215                 220

Ala Arg Leu Ala Leu Phe Tyr Ala Arg Ala Ala Cys Gly Leu Val Asp
225                 230                 235                 240

Pro Ser Ala Gly Thr Gly Val Ala Asn Ala Gly Leu Val Tyr Phe Asn
                245                 250                 255

Gly Arg Leu Leu Ala Met Ser Glu Asp Asp Leu Pro Tyr His Val Arg
                260                 265                 270

Val Ala Asp Asp Gly Asp Leu Glu Thr Val Gly Arg Tyr Asp Phe Asp
     275                 280                 285

Gly Gln Leu Gly Cys Ala Met Ile Ala His Pro Lys Leu Asp Pro Ala
     290                 295                 300

Thr Gly Glu Leu His Ala Leu Ser Tyr Asp Val Ile Lys Arg Pro Tyr
305                 310                 315                 320

Leu Lys Tyr Phe Tyr Phe Arg Pro Asp Gly Thr Lys Ser Asp Asp Val
                325                 330                 335

Glu Ile Pro Leu Glu Gln Pro Thr Met Ile His Asp Phe Ala Ile Thr
                340                 345                 350
```

Glu Asn Phe Val Val Val Pro Asp His Gln Val Val Phe Lys Leu Gln
     355   360   365

Glu Met Leu Arg Gly Gly Ser Pro Val Val Leu Asp Lys Glu Lys Thr
     370   375   380

Ser Arg Phe Gly Val Leu Pro Lys His Ala Ala Asp Ala Ser Glu Met
385   390   395   400

Ala Trp Val Asp Val Pro Asp Cys Phe Cys Phe His Leu Trp Asn Ala
              405   410   415

Trp Glu Asp Glu Ala Thr Gly Glu Val Val Val Ile Gly Ser Cys Met
              420   425   430

Thr Pro Ala Asp Ser Ile Phe Asn Glu Ser Asp Glu Arg Leu Glu Ser
         435   440   445

Val Leu Thr Glu Ile Arg Leu Asp Ala Arg Thr Gly Arg Ser Thr Arg
     450   455   460

Arg Ala Val Leu Pro Pro Ser Gln Gln Glu Asn Leu Glu Val Gly Met
465   470   475   480

Val Asn Arg Asn Leu Leu Gly Arg Glu Ser Arg Tyr Ala Tyr Leu Ala
              485   490   495

Val Ala Glu Pro Trp Pro Lys Glu Ser Gly Phe Ala Lys Glu Asp Leu
         500   505   510

Ser Thr Gly Glu Leu Thr Lys Phe Glu Tyr Gly Glu Gly Arg Phe Gly
     515   520   525

Gly Glu Pro Cys Phe Val Pro Met Asp Pro Ala Ala Ala His Pro Arg
     530   535   540

Gly Glu Asp Asp Gly Tyr Val Leu Thr Phe Val His Asp Glu Arg Ala
545   550   555   560

Gly Thr Ser Glu Leu Leu Val Val Asn Ala Ala Asp Ile Arg Leu Glu
                565   570   575

Ala Thr Val Gln Leu Pro Ser Arg Val Pro Phe Gly Phe His Gly Thr
            580   585   590

Phe Ile Thr Gly Gln Glu Leu Glu Ala Gln Ala Ala
        595   600

<210> 15
<211> 1818
<212> DNA
<213> Lycopersicon esculentum

<220>
<221> CDS
<222> (1)..(1818)

<400> 15

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atg gca act act act tca cat gcc aca aat aca tgg att aag act aag    48
Met Ala Thr Thr Thr Ser His Ala Thr Asn Thr Trp Ile Lys Thr Lys
 1               5                  10                  15

ttg tca atg cca tca tca aag gag ttt ggt ttt gca tca aac tct att    96
Leu Ser Met Pro Ser Ser Lys Glu Phe Gly Phe Ala Ser Asn Ser Ile
            20                  25                  30

tct cta ctc aaa aat caa cat aat agg caa agt ctc aac att aat tcc   144
Ser Leu Leu Lys Asn Gln His Asn Arg Gln Ser Leu Asn Ile Asn Ser
        35                  40                  45

tct ctt caa gct cca cct ata ctt cat ttt cct aaa caa tct tca aat   192
Ser Leu Gln Ala Pro Pro Ile Leu His Phe Pro Lys Gln Ser Ser Asn
    50                  55                  60

tat caa aca cca aag aat aat aca att tca cac cca aaa caa gaa aac   240
Tyr Gln Thr Pro Lys Asn Asn Thr Ile Ser His Pro Lys Gln Glu Asn
65                  70                  75                  80
```

aac aac tcc tct tct tct tca act tcc aag tgg aat tta gtg cag aaa   288
Asn Asn Ser Ser Ser Ser Ser Thr Ser Lys Trp Asn Leu Val Gln Lys
          85   90   95

gca gca gca atg gct tta gat gct gta gaa agt gct tta act aaa cat   336
Ala Ala Ala Met Ala Leu Asp Ala Val Glu Ser Ala Leu Thr Lys His
          100   105   110

gaa ctt gaa cac cct ttg ccg aaa aca gcc gac cca cga gtc cag att   384
Glu Leu Glu His Pro Leu Pro Lys Thr Ala Asp Pro Arg Val Gln Ile
          115   120   125

tct ggg aat ttt gct ccg gta ccg gaa aat cca gtc tgt caa tct ctt   432
Ser Gly Asn Phe Ala Pro Val Pro Glu Asn Pro Val Cys Gln Ser Leu
          130   135   140

ccg gtc acc gga aaa ata ccc aaa tgt gtt caa ggc gtt tac gtt cga   480
Pro Val Thr Gly Lys Ile Pro Lys Cys Val Gln Gly Val Tyr Val Arg
145   150   155   160

aac gga gct aac cct ctt ttt gaa cca acc gcc gga cac cat ttc ttc   528
Asn Gly Ala Asn Pro Leu Phe Glu Pro Thr Ala Gly His His Phe Phe
          165   170   175

gac ggc gac ggt atg gtt cac gcc gtt caa ttc aaa aat ggg tcg gct   576
Asp Gly Asp Gly Met Val His Ala Val Gln Phe Lys Asn Gly Ser Ala
          180   185   190

agt tac gct tgc cgt ttc act gaa aca gag agg ctt gtt caa gaa aaa   624
Ser Tyr Ala Cys Arg Phe Thr Glu Thr Glu Arg Leu Val Gln Glu Lys
          195   200   205

gct ttg ggt cgc cct gtt ttc cct aaa gcc att ggt gaa tta cat ggt   672
Ala Leu Gly Arg Pro Val Phe Pro Lys Ala Ile Gly Glu Leu His Gly
          210   215   220

cac tct gga att gca agg ctt atg ctg ttt tac gct cgt ggg ctc ttc   720
His Ser Gly Ile Ala Arg Leu Met Leu Phe Tyr Ala Arg Gly Leu Phe
225   230   235   240

gga ctt gtt gat cac agt aaa gga act ggt gtt gca aac gcc ggt tta   768
Gly Leu Val Asp His Ser Lys Gly Thr Gly Val Ala Asn Ala Gly Leu
           245   250   255

gtc tat ttc aat aac cga tta ctt gct atg tct gaa gat gat ttg cct   816
Val Tyr Phe Asn Asn Arg Leu Leu Ala Met Ser Glu Asp Asp Leu Pro
           260   265   270

tac cat gta aag gta aca ccc acc ggc gat ctt aaa aca gag ggt cga   864
Tyr His Val Lys Val Thr Pro Thr Gly Asp Leu Lys Thr Glu Gly Arg
           275   280   285

ttc gat ttc gac ggc cag cta aaa tcc acc atg ata gct cac cca aag   912
Phe Asp Phe Asp Gly Gln Leu Lys Ser Thr Met Ile Ala His Pro Lys
           290   295   300

ctc gac cca gtt tcc ggt gag cta ttt gct ctt agc tac gat gtg att   960
Leu Asp Pro Val Ser Gly Glu Leu Phe Ala Leu Ser Tyr Asp Val Ile
305   310   315   320

cag aag cca tac ctc aag tac ttc aga ttt tca aaa aat ggg gaa aaa   1008
Gln Lys Pro Tyr Leu Lys Tyr Phe Arg Phe Ser Lys Asn Gly Glu Lys
           325   330   335

tca aat gat gtt gaa att cca gtt gaa gac cca aca atg atg cat gat   1056
Ser Asn Asp Val Glu Ile Pro Val Glu Asp Pro Thr Met Met His Asp
           340   345   350

ttc gca att act gag aac ttc gtc gtc att cct gat caa caa gtc gtt   1104
Phe Ala Ile Thr Glu Asn Phe Val Val Ile Pro Asp Gln Gln Val Val
           355   360   365

ttc aag atg tct gaa atg atc cgt gga ggt tca ccg gtg gtt tac gac   1152
Phe Lys Met Ser Glu Met Ile Arg Gly Gly Ser Pro Val Val Tyr Asp
           370   375   380

aag aac aaa gtt tcc cga ttt ggt att ctg gat aag tac gcg aaa gat   1200
Lys Asn Lys Val Ser Arg Phe Gly Ile Leu Asp Lys Tyr Ala Lys Asp
           385   390   395   400

ggg tct gat ttg aaa tgg gtt gaa gta cct gat tgt ttc tgt ttc cac   1248
Gly Ser Asp Leu Lys Trp Val Glu Val Pro Asp Cys Phe Cys Phe His
                405   410   415

ctc tgg aat gct tgg gaa gaa gca gaa aca gat gaa atc gtt gta att   1296
Leu Trp Asn Ala Trp Glu Glu Ala Glu Thr Asp Glu Ile Val Val Ile
                420   425   430

ggt tca tgt atg aca cca cca gac tcc att ttc aat gaa tgt gat gaa   1344
Gly Ser Cys Met Thr Pro Pro Asp Ser Ile Phe Asn Glu Cys Asp Glu
                435   440   445

ggg cta aag agt gtt tta tcc gaa atc cgt ctc aat ttg aaa aca ggg   1392
Gly Leu Lys Ser Val Leu Ser Glu Ile Arg Leu Asn Leu Lys Thr Gly
            450   455   460

aaa tca aca aga aaa tcc ata atc gaa aac ccg gat gaa caa gtg aat   1440
Lys Ser Thr Arg Lys Ser Ile Ile Glu Asn Pro Asp Glu Gln Val Asn
465   470   475   480

tta gaa gct gga atg gtg aac cga aac aaa ctc gga agg aaa aca gag   1488
Leu Glu Ala Gly Met Val Asn Arg Asn Lys Leu Gly Arg Lys Thr Glu
                485   490   495

tat gct tat ttg gct atc gct gaa cca tgg cca aaa gtt tct ggt ttt   1536
Tyr Ala Tyr Leu Ala Ile Ala Glu Pro Trp Pro Lys Val Ser Gly Phe
                500   505   510

gca aaa gta aac ctg ttc acc ggt gaa gtt gag aaa ttc att tat ggt   1584
Ala Lys Val Asn Leu Phe Thr Gly Glu Val Glu Lys Phe Ile Tyr Gly
                515   520   525

gac aac aaa tat ggt ggg gaa cct ctt ttt tta cca aga gac ccc aac   1632
Asp Asn Lys Tyr Gly Gly Glu Pro Leu Phe Leu Pro Arg Asp Pro Asn
                530   535   540

agc aag gaa gaa gac gat ggt tat att tta gct ttc gtt cac gat gag   1680
Ser Lys Glu Glu Asp Asp Gly Tyr Ile Leu Ala Phe Val His Asp Glu
545   550   555   560

```
aaa gaa tgg aaa tca gaa ctg caa att gtt aac gca atg agt ttg aag    1728
Lys Glu Trp Lys Ser Glu Leu Gln Ile Val Asn Ala Met Ser Leu Lys
                565                 570                 575


ttg gag gca act gtg aag ctt cca tca aga gtt cct tat gga ttt cat    1776
Leu Glu Ala Thr Val Lys Leu Pro Ser Arg Val Pro Tyr Gly Phe His
                580                 585                 590


gga aca ttc ata aac gcc aat gat ttg gca aat cag gca tga            1818
Gly Thr Phe Ile Asn Ala Asn Asp Leu Ala Asn Gln Ala
            595                 600                 605
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<210> 16
<211> 605
<212> PRT
<213> Lycopersicon esculentum

<400> 16
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Met Ala Thr Thr Thr Ser His Ala Thr Asn Thr Trp Ile Lys Thr Lys
 1               5                10                  15


Leu Ser Met Pro Ser Ser Lys Glu Phe Gly Phe Ala Ser Asn Ser Ile
              20                25                  30


Ser Leu Leu Lys Asn Gln His Asn Arg Gln Ser Leu Asn Ile Asn Ser
          35                40                45


Ser Leu Gln Ala Pro Pro Ile Leu His Phe Pro Lys Gln Ser Ser Asn
      50                55                60


Tyr Gln Thr Pro Lys Asn Asn Thr Ile Ser His Pro Lys Gln Glu Asn
65                  70                75                  80


Asn Asn Ser Ser Ser Ser Ser Thr Ser Lys Trp Asn Leu Val Gln Lys
              85                90                  95


Ala Ala Ala Met Ala Leu Asp Ala Val Glu Ser Ala Leu Thr Lys His
              100               105                 110
```

Glu Leu Glu His Pro Leu Pro Lys Thr Ala Asp Pro Arg Val Gln Ile
      115   120   125

Ser Gly Asn Phe Ala Pro Val Pro Glu Asn Pro Val Cys Gln Ser Leu
   130   135   140

Pro Val Thr Gly Lys Ile Pro Lys Cys Val Gln Gly Val Tyr Val Arg
145   150   155   160

Asn Gly Ala Asn Pro Leu Phe Glu Pro Thr Ala Gly His His Phe Phe
      165   170   175

Asp Gly Asp Gly Met Val His Ala Val Gln Phe Lys Asn Gly Ser Ala
      180   185   190

Ser Tyr Ala Cys Arg Phe Thr Glu Thr Glu Arg Leu Val Gln Glu Lys
    195   200   205

Ala Leu Gly Arg Pro Val Phe Pro Lys Ala Ile Gly Glu Leu His Gly
   210   215   220

His Ser Gly Ile Ala Arg Leu Met Leu Phe Tyr Ala Arg Gly Leu Phe
225   230   235   240

Gly Leu Val Asp His Ser Lys Gly Thr Gly Val Ala Asn Ala Gly Leu
      245   250   255

Val Tyr Phe Asn Asn Arg Leu Leu Ala Met Ser Glu Asp Asp Leu Pro
     260   265   270

Tyr His Val Lys Val Thr Pro Thr Gly Asp Leu Lys Thr Glu Gly Arg
    275   280   285

Phe Asp Phe Asp Gly Gln Leu Lys Ser Thr Met Ile Ala His Pro Lys
   290   295   300

Leu Asp Pro Val Ser Gly Glu Leu Phe Ala Leu Ser Tyr Asp Val Ile
305   310   315   320

Gln Lys Pro Tyr Leu Lys Tyr Phe Arg Phe Ser Lys Asn Gly Glu Lys

                        325   330   335

Ser Asn Asp Val Glu Ile Pro Val Glu Asp Pro Thr Met Met His Asp
            340   345   350

Phe Ala Ile Thr Glu Asn Phe Val Val Ile Pro Asp Gln Gln Val Val
            355   360   365

Phe Lys Met Ser Glu Met Ile Arg Gly Gly Ser Pro Val Val Tyr Asp
    370   375   380

Lys Asn Lys Val Ser Arg Phe Gly Ile Leu Asp Lys Tyr Ala Lys Asp
385   390   395   400

Gly Ser Asp Leu Lys Trp Val Glu Val Pro Asp Cys Phe Cys Phe His
                405   410   415

Leu Trp Asn Ala Trp Glu Glu Ala Glu Thr Asp Glu Ile Val Val Ile
            420   425   430

Gly Ser Cys Met Thr Pro Pro Asp Ser Ile Phe Asn Glu Cys Asp Glu
            435   440   445

Gly Leu Lys Ser Val Leu Ser Glu Ile Arg Leu Asn Leu Lys Thr Gly
    450   455   460

Lys Ser Thr Arg Lys Ser Ile Ile Glu Asn Pro Asp Glu Gln Val Asn
465   470   475   480

Leu Glu Ala Gly Met Val Asn Arg Asn Lys Leu Gly Arg Lys Thr Glu
                485   490   495

Tyr Ala Tyr Leu Ala Ile Ala Glu Pro Trp Pro Lys Val Ser Gly Phe
            500   505   510

Ala Lys Val Asn Leu Phe Thr Gly Glu Val Glu Lys Phe Ile Tyr Gly
            515   520   525

Asp Asn Lys Tyr Gly Gly Glu Pro Leu Phe Leu Pro Arg Asp Pro Asn
    530   535   540

Ser Lys Glu Glu Asp Asp Gly Tyr Ile Leu Ala Phe Val His Asp Glu
545   550   555   560

Lys Glu Trp Lys Ser Glu Leu Gln Ile Val Asn Ala Met Ser Leu Lys
            565   570   575

Leu Glu Ala Thr Val Lys Leu Pro Ser Arg Val Pro Tyr Gly Phe His
            580   585   590

Gly Thr Phe Ile Asn Ala Asn Asp Leu Ala Asn Gln Ala
            595   600   605

<210> 17
<211> 1617
<212> DNA
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<220>
<221> CDS
<222> (1)..(1617)

<400> 17
atg gcg gag aaa ctc agt gat ggc agc atc atc atc tca gtc cat cct   48
Met Ala Glu Lys Leu Ser Asp Gly Ser Ile Ile Ile Ser Val His Pro
 1   5   10   15

aga ccc tcc aag ggt ttc tcc tcg aag ctt ctc gat ctt ctc gag aga   96
Arg Pro Ser Lys Gly Phe Ser Ser Lys Leu Leu Asp Leu Leu Glu Arg
            20   25   30

ctt gtc gtc aag ctc atg cac gat gct tct ctc cct ctc cac tac ctc   144
Leu Val Val Lys Leu Met His Asp Ala Ser Leu Pro Leu His Tyr Leu
            35   40   45

tca ggc aac ttc gct ccc atc cgt gat gaa act cct ccc gtc aag gat   192
Ser Gly Asn Phe Ala Pro Ile Arg Asp Glu Thr Pro Pro Val Lys Asp
        50   55   60

```
ctc ccc gtc cat gga ttt ctt ccc gaa tgc ttg aat ggt gaa ttt gtg   240
Leu Pro Val His Gly Phe Leu Pro Glu Cys Leu Asn Gly Glu Phe Val
65              70              75              80


agg gtt ggt cca aac ccc aag ttt gat gct gtc gct gga tat cac tgg   288
Arg Val Gly Pro Asn Pro Lys Phe Asp Ala Val Ala Gly Tyr His Trp
                85              90              95


ttt gat gga gat ggg atg att cat ggg gta cgc atc aaa gat ggg aaa   336
Phe Asp Gly Asp Gly Met Ile His Gly Val Arg Ile Lys Asp Gly Lys
            100             105             110


gct act tat gtt tct cga tat gtt aag aca tca cgt ctt aag cag gaa   384
Ala Thr Tyr Val Ser Arg Tyr Val Lys Thr Ser Arg Leu Lys Gln Glu
        115             120             125


gag ttc ttc gga gct gcc aaa ttc atg aag att ggt gac ctt aag ggg   432
Glu Phe Phe Gly Ala Ala Lys Phe Met Lys Ile Gly Asp Leu Lys Gly
    130             135             140


ttt ttc gga ttg cta atg gtc aat atc caa cag ctg aga acg aag ctc   480
Phe Phe Gly Leu Leu Met Val Asn Ile Gln Gln Leu Arg Thr Lys Leu
145             150             155             160


aaa ata ttg gac aac act tat gga aat gga act gcc aat aca gca ctc   528
Lys Ile Leu Asp Asn Thr Tyr Gly Asn Gly Thr Ala Asn Thr Ala Leu
            165             170             175


gta tat cac cat gga aaa ctt cta gca tta cag gag gca gat aag ccg   576
Val Tyr His His Gly Lys Leu Leu Ala Leu Gln Glu Ala Asp Lys Pro
            180             185             190


tac gtc atc aaa gtt ttg gaa gat gga gac ctg caa act ctt ggt ata   624
Tyr Val Ile Lys Val Leu Glu Asp Gly Asp Leu Gln Thr Leu Gly Ile
        195             200             205


ata gat tat gac aag aga ttg acc cac tcc ttc act gct cac cca aaa   672
Ile Asp Tyr Asp Lys Arg Leu Thr His Ser Phe Thr Ala His Pro Lys
    210             215             220
```

```
gtt gac ccg gtt acg ggt gaa atg ttt aca ttc ggc tat tcg cat acg    720
Val Asp Pro Val Thr Gly Glu Met Phe Thr Phe Gly Tyr Ser His Thr
225                 230             235                 240
```

```
cca cct tat ctc aca tac aga gtt atc tcg aaa gat ggc att atg cat    768
Pro Pro Tyr Leu Thr Tyr Arg Val Ile Ser Lys Asp Gly Ile Met His
                245                 250                 255
```

```
gac cca gtc cca att act ata tca gag cct atc atg atg cat gat ttt    816
Asp Pro Val Pro Ile Thr Ile Ser Glu Pro Ile Met Met His Asp Phe
                260                 265                 270
```

```
gct att act gag act tat gca atc ttc atg gat ctt cct atg cac ttc    864
Ala Ile Thr Glu Thr Tyr Ala Ile Phe Met Asp Leu Pro Met His Phe
                275                 280                 285
```

```
agg cca aag gaa atg gtg aaa gag aag aaa atg ata tac tca ttt gat    912
Arg Pro Lys Glu Met Val Lys Glu Lys Lys Met Ile Tyr Ser Phe Asp
290                 295                 300
```

```
ccc aca aaa aag gct cgt ttt ggt gtt ctt ccg cgc tat gcc aag gat    960
Pro Thr Lys Lys Ala Arg Phe Gly Val Leu Pro Arg Tyr Ala Lys Asp
305                 310                 315                 320
```

```
gaa ctt atg att aga tgg ttt gag ctt ccc aac tgc ttt att ttc cac   1008
Glu Leu Met Ile Arg Trp Phe Glu Leu Pro Asn Cys Phe Ile Phe His
                325                 330                 335
```

```
aac gcc aat gct tgg gaa gaa gag gat gaa gtc gtc ctc atc act tgt   1056
Asn Ala Asn Ala Trp Glu Glu Glu Asp Glu Val Val Leu Ile Thr Cys
                340                 345                 350
```

```
cgt ctt gag aat cca gat ctt gac atg gtc agt ggg aaa gtg aaa gaa   1104
Arg Leu Glu Asn Pro Asp Leu Asp Met Val Ser Gly Lys Val Lys Glu
                355                 360                 365
```

```
aaa ctc gaa aat ttt ggc aac gaa ctg tac gaa atg aga ttc aac atg   1152
Lys Leu Glu Asn Phe Gly Asn Glu Leu Tyr Glu Met Arg Phe Asn Met
370                 375                 380
```

```
aaa acg ggc tca gct tct caa aaa aaa cta tcc gca tct gcg gtt gat    1200
Lys Thr Gly Ser Ala Ser Gln Lys Lys Leu Ser Ala Ser Ala Val Asp
385             390             395                 400


ttc ccc aga atc aat gag tgc tac acc gga aag aaa cag aga tac gta    1248
Phe Pro Arg Ile Asn Glu Cys Tyr Thr Gly Lys Lys Gln Arg Tyr Val
                405             410             415


tat gga aca att ctg gac agt atc gca aag gtt acc gga atc atc aag    1296
Tyr Gly Thr Ile Leu Asp Ser Ile Ala Lys Val Thr Gly Ile Ile Lys
                420             425             430


ttt gat ctg cat gca gaa gct gag aca ggg aaa aga atg ctg gaa gta    1344
Phe Asp Leu His Ala Glu Ala Glu Thr Gly Lys Arg Met Leu Glu Val
                435             440             445


gga ggt aat atc aaa gga ata tat gac ctg gga gaa ggc aga tat ggt    1392
Gly Gly Asn Ile Lys Gly Ile Tyr Asp Leu Gly Glu Gly Arg Tyr Gly
    450             455                 460


tca gag gct atc tat gtt ccg cgt gag aca gca gaa gaa gac gac ggt    1440
Ser Glu Ala Ile Tyr Val Pro Arg Glu Thr Ala Glu Glu Asp Asp Gly
465             470             475                 480


tac ttg ata ttc ttt gtt cat gat gaa aac aca ggg aaa tca tgc gtg    1488
Tyr Leu Ile Phe Phe Val His Asp Glu Asn Thr Gly Lys Ser Cys Val
                485             490             495


act gtg ata gac gca aaa aca atg tcg gct gaa ccg gtg gca gtg gtg    1536
Thr Val Ile Asp Ala Lys Thr Met Ser Ala Glu Pro Val Ala Val Val
                500             505             510


gag ctg ccg cac agg gtc cca tat ggc ttc cat gcc ttg ttt gtt aca    1584
Glu Leu Pro His Arg Val Pro Tyr Gly Phe His Ala Leu Phe Val Thr
                515             520             525


gag gaa caa ctc cag gaa caa act ctt ata taa                        1617
Glu Glu Gln Leu Gln Glu Gln Thr Leu Ile
530             535
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<210> 18
<211> 538
<212> PRT
<213> Arabidopsis thaliana

<400> 18
Met Ala Glu Lys Leu Ser Asp Gly Ser Ile Ile Ile Ser Val His Pro
1   5   10   15

Arg Pro Ser Lys Gly Phe Ser Ser Lys Leu Leu Asp Leu Leu Glu Arg
            20   25   30

Leu Val Val Lys Leu Met His Asp Ala Ser Leu Pro Leu His Tyr Leu
        35   40   45

Ser Gly Asn Phe Ala Pro Ile Arg Asp Glu Thr Pro Pro Val Lys Asp
        50   55   60

Leu Pro Val His Gly Phe Leu Pro Glu Cys Leu Asn Gly Glu Phe Val
65   70   75   80

Arg Val Gly Pro Asn Pro Lys Phe Asp Ala Val Ala Gly Tyr His Trp
                85   90   95

Phe Asp Gly Asp Gly Met Ile His Gly Val Arg Ile Lys Asp Gly Lys
                100   105   110

Ala Thr Tyr Val Ser Arg Tyr Val Lys Thr Ser Arg Leu Lys Gln Glu
            115   120   125

Glu Phe Phe Gly Ala Ala Lys Phe Met Lys Ile Gly Asp Leu Lys Gly
            130   135   140

Phe Phe Gly Leu Leu Met Val Asn Ile Gln Gln Leu Arg Thr Lys Leu
145   150   155   160

Lys Ile Leu Asp Asn Thr Tyr Gly Asn Gly Thr Ala Asn Thr Ala Leu
                165   170   175

Val Tyr His His Gly Lys Leu Leu Ala Leu Gln Glu Ala Asp Lys Pro
    180   185   190

Tyr Val Ile Lys Val Leu Glu Asp Gly Asp Leu Gln Thr Leu Gly Ile
    195   200   205

Ile Asp Tyr Asp Lys Arg Leu Thr His Ser Phe Thr Ala His Pro Lys
   210   215   220

Val Asp Pro Val Thr Gly Glu Met Phe Thr Phe Gly Tyr Ser His Thr
225   230   235   240

Pro Pro Tyr Leu Thr Tyr Arg Val Ile Ser Lys Asp Gly Ile Met His
    245   250   255

Asp Pro Val Pro Ile Thr Ile Ser Glu Pro Ile Met Met His Asp Phe
    260   265   270

Ala Ile Thr Glu Thr Tyr Ala Ile Phe Met Asp Leu Pro Met His Phe
    275   280   285

Arg Pro Lys Glu Met Val Lys Glu Lys Lys Met Ile Tyr Ser Phe Asp
   290   295   300

Pro Thr Lys Lys Ala Arg Phe Gly Val Leu Pro Arg Tyr Ala Lys Asp
305   310   315   320

Glu Leu Met Ile Arg Trp Phe Glu Leu Pro Asn Cys Phe Ile Phe His
     325   330   335

Asn Ala Asn Ala Trp Glu Glu Glu Asp Glu Val Val Leu Ile Thr Cys
    340   345   350

Arg Leu Glu Asn Pro Asp Leu Asp Met Val Ser Gly Lys Val Lys Glu
   355   360   365

Lys Leu Glu Asn Phe Gly Asn Glu Leu Tyr Glu Met Arg Phe Asn Met
   370   375   380

Lys Thr Gly Ser Ala Ser Gln Lys Lys Leu Ser Ala Ser Ala Val Asp

385   390   395   400

```
Phe Pro Arg Ile Asn Glu Cys Tyr Thr Gly Lys Lys Gln Arg Tyr Val
            405                 410                 415

Tyr Gly Thr Ile Leu Asp Ser Ile Ala Lys Val Thr Gly Ile Ile Lys
            420                 425                 430

Phe Asp Leu His Ala Glu Ala Glu Thr Gly Lys Arg Met Leu Glu Val
            435                 440                 445

Gly Gly Asn Ile Lys Gly Ile Tyr Asp Leu Gly Glu Gly Arg Tyr Gly
        450                 455                 460

Ser Glu Ala Ile Tyr Val Pro Arg Glu Thr Ala Glu Glu Asp Asp Gly
465                 470                 475                 480

Tyr Leu Ile Phe Phe Val His Asp Glu Asn Thr Gly Lys Ser Cys Val
            485                 490                 495

Thr Val Ile Asp Ala Lys Thr Met Ser Ala Glu Pro Val Ala Val Val
            500                 505                 510

Glu Leu Pro His Arg Val Pro Tyr Gly Phe His Ala Leu Phe Val Thr
            515                 520                 525

Glu Glu Gln Leu Gln Glu Gln Thr Leu Ile
    530                 535
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<213> Artificial Sequence

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attgaattca tgccttcagc ttcaaac   27

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